

09/045,072

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(FILE 'HOME' ENTERED AT 09:42:56 ON 29 MAR 2004)

FILE 'MEDLINE, EMBASE, BIOSIS, BIOTECHDS, SCISEARCH, HCAPLUS, NTIS,
LIFESCI' ENTERED AT 09:43:31 ON 29 MAR 2004

L1 8583 S PYRUVATE (A) CARBOXYLASE?
L2 7190 S GLUTAMICUM
L3 415 S L1 AND L2
L4 6447994 S CLON? OR EXPRESS? OR RECOMBINANT
L5 321 S L3 AND L4
L6 7054 S CORYNEBACTERIUM (A) L2
L7 414 S L1 AND L6
L8 321 S L4 AND L7
L9 254853 S LYSINE
L10 1966 S L9(A) (PRODUCT? OR MAK? OR MANUFACTUR?)
L11 108 S L8 AND L10
L12 92 DUP REM L11 (16 DUPLICATES REMOVED)
L13 79 S L8 AND MUTANT?
L14 15 S L10 AND L13
L15 7 DUP REM L14 (8 DUPLICATES REMOVED)
 E SINSKEY A J/AU
L16 1165 S E3-E8
 E LESSARD P A/AU
L17 85 S E3
 E WILLIS L B/AU
L18 35 S E3
L19 1219 S L16 OR L17 OR L18
L20 26 S L7 AND L19
L21 8 DUP REM L20 (18 DUPLICATES REMOVED)

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NEWS	8	OCT 28	BIOSIS file segment of TOXCENTER reloaded and enhanced
NEWS	9	NOV 24	MSDS-CCOHS file reloaded
NEWS	10	DEC 08	CABA reloaded with left truncation
NEWS	11	DEC 08	IMS file names changed
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NEWS	15	DEC 18	BIOTECHNO no longer updated
NEWS	16	DEC 19	CROPU no longer updated; subscriber discount no longer available
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NEWS	18	DEC 22	IFIPAT/IFIUDB/IFICDB reloaded with new data and search fields
NEWS	19	DEC 22	ABI-INFORM now available on STN
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NEWS	21	JAN 27	A new search aid, the Company Name Thesaurus, available in CA/CAplus
NEWS	22	FEB 05	German (DE) application and patent publication number format changes
NEWS	23	MAR 03	MEDLINE and LMEDLINE reloaded
NEWS	24	MAR 03	MEDLINE file segment of TOXCENTER reloaded
NEWS	25	MAR 03	FRANCEPAT now available on STN
NEWS EXPRESS			MARCH 5 CURRENT WINDOWS VERSION IS V7.00A, CURRENT MACINTOSH VERSION IS V6.0b(ENG) AND V6.0Jb(JP), AND CURRENT DISCOVER FILE IS DATED 3 MARCH 2004
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FILE 'LIFESCI' ENTERED AT 09:43:31 ON 29 MAR 2004
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=> s pyruvate (a) carboxylase?
L1 8583 PYRUVATE (A) CARBOXYLASE?

=> s glutamicum
L2 7190 GLUTAMICUM

=> s l1 and l2
L3 415 L1 AND L2

=> s clon? or express? o

L4 6447994 CLON? OR EXPRESS? OR RECOMBINANT

L5 321 L3 AND L4

=> s corynebacterium(a)12
L6 7054 CORYNEBACTERIUM (A) L2

=> S 11 and 16
L7 414 L1 AND L6

=> S 14 AND L7
L8 321 L4 AND L7

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=> s lysine
L9      254853 LYSINE

=> s l9(a) (product? or mak? or manufactur?)
L10      1966 L9(A) (PRODUCT? OR MAK? OR MANUFACTUR?)

=> s l8 and l10
L11      108 L8 AND L10

=> dup rem l11
PROCESSING COMPLETED FOR L11
L12      92 DUP REM L11 (16 DUPLICATES REMOVED)

=> s l8 and mutant?
L13      79 L8 AND MUTANT?

=> s l10 and l13
L14      15 L10 AND L13

=> dup rem l14
PROCESSING COMPLETED FOR L14
L15      7 DUP REM L14 (8 DUPLICATES REMOVED)

=> d 1-7 ibib ab

L15 ANSWER 1 OF 7 HCPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:220796 HCPLUS
DOCUMENT NUMBER: 136:261907
TITLE: Sequences of pknB gene from corynebacteria and use
thereof in production of L-lysine
INVENTOR(S): Bathe, Brigitte; Hans, Stephan; Farwick, Mike;
Hermann, Thomas
PATENT ASSIGNEE(S): Degussa A.-G., Germany
SOURCE: PCT Int. Appl., 46 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:



| PATENT NO.             | KIND                                                                                                                                                                                                                                                                                                                                                                                   | DATE     | APPLICATION NO.    | DATE     |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------------------|----------|
| WO 2002022828          | A1                                                                                                                                                                                                                                                                                                                                                                                     | 20020321 | WO 2001-EP10211    | 20010905 |
| W:                     | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM |          |                    |          |
| RW:                    | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG                                                                                                                                                                                             |          |                    |          |
| DE 10120095            | A1                                                                                                                                                                                                                                                                                                                                                                                     | 20020328 | DE 2001-10120095   | 20010425 |
| AU 2001082132          | A5                                                                                                                                                                                                                                                                                                                                                                                     | 20020326 | AU 2001-82132      | 20010905 |
| EP 1317547             | A1                                                                                                                                                                                                                                                                                                                                                                                     | 20030611 | EP 2001-960723     | 20010905 |
| R:                     | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR                                                                                                                                                                                                                                                                                 |          |                    |          |
| US 2002042105          | A1                                                                                                                                                                                                                                                                                                                                                                                     | 20020411 | US 2001-949970     | 20010912 |
| PRIORITY APPLN. INFO.: |                                                                                                                                                                                                                                                                                                                                                                                        |          | DE 2000-10044912 A | 20000912 |
|                        |                                                                                                                                                                                                                                                                                                                                                                                        |          | DE 2001-10120095 A | 20010425 |
|                        |                                                                                                                                                                                                                                                                                                                                                                                        |          | US 2001-297250P P  | 20010612 |
|                        |                                                                                                                                                                                                                                                                                                                                                                                        |          | WO 2001-EP10211 W  | 20010905 |


AB The pknB gene of Corynebacterium glutamicum ATCC13032

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encoding protein kinase B is cloned for use in increasing the efficiency of fermentation of L-lysine by coryneform bacteria. Methods and culture media for fermentative preparation of L-lysine with recombinant bacterial strains transformed with these vectors are also provided. Enhancement of the pknB gene expression by pknB shuttle vector could increase the yield of L-lysine in a Corynebacterium host. The fermentatively prepared L-lysine are useful in pharmaceutical industry and foodstuff industry and very particularly in animal nutrition.

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 2 OF 7 HCPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:220795 HCPLUS
DOCUMENT NUMBER: 136:261906
TITLE: Sequences of ptsI gene from corynebacteria and use thereof in production of L-lysine
INVENTOR(S): Moeckel, Bettina; Hans, Stephan; Schischka, Natalie; Pfefferle, Walter
PATENT ASSIGNEE(S): Degussa A.-G., Germany
SOURCE: PCT Int. Appl., 56 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|--|----------|--------------------|----------|
| WO 2002022827 | A1 | 20020321 | WO 2001-EP10072 | 20010831 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| DE 10045496 | A1 | 20020328 | DE 2000-10045496 | 20000914 |
| AU 2001089858 | A5 | 20020326 | AU 2001-89858 | 20010831 |
| EP 1317549 | A1 | 20030611 | EP 2001-969679 | 20010831 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |
| US 2002132323 | A1 | 20020919 | US 2001-950788 | 20010913 |
| US 6680187 | B2 | 20040120 | | |
| US 2003198991 | A1 | 20031023 | US 2003-460294 | 20030613 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10045496 A | 20000914 |
| | | | WO 2001-EP10072 W | 20010831 |
| | | | US 2001-950788 A3 | 20010913 |

AB The ptsI gene of **Corynebacterium glutamicum** ATCC13032 encoding phosphotransferase system enzyme I is cloned for use in increasing the efficiency of fermentation of L-lysine by coryneform bacteria. Methods and culture media for fermentative preparation of L-lysine with recombinant bacterial strains transformed with these vectors are also provided. Enhancement of the ptsI gene expression by ptsI shuttle vector could increase the yield of L-lysine in a Corynebacterium host. The fermentatively prepared L-lysine are useful in pharmaceutical industry and foodstuff industry and very particularly in animal nutrition.

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 3 OF 7 HCPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:220607 HCPLUS
DOCUMENT NUMBER: 136:261897

TITLE: Sequences of pknD gene from corynebacteria and use
 thereof in production of L-lysine
 INVENTOR(S): Bathe, Brigitte; Schroeder, Indra; Farwick, Mike;
 Hermann, Thomas
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 46 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|------------------|----------|
| WO 2002022632 | A2 | 20020321 | WO 2001-EP10210 | 20010905 |
| WO 2002022632 | A3 | 20020613 | | |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL,
PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG,
UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| DE 10120094 | A1 | 20020328 | DE 2001-10120094 | 20010425 |
| AU 2001095539 | A5 | 20020326 | AU 2001-95539 | 20010905 |
| EP 1317545 | A2 | 20030611 | EP 2001-976189 | 20010905 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |
| US 2002039766 | A1 | 20020404 | US 2001-949971 | 20010912 |
| PRIORITY APPLN. INFO.:
DE 2000-10044948 A 20000912
DE 2001-10120094 A 20010425
US 2001-297266P P 20010612
WO 2001-EP10210 W 20010905 | | | | |

AB The pknD gene of *Corynebacterium glutamicum* ATCC13032 encoding protein kinase D is cloned for use in increasing the efficiency of fermentation of L-lysine by coryneform bacteria. Methods and culture media for fermentative preparation of L-lysine with recombinant bacterial strains transformed with these vectors are also provided. Enhancement of the pknD gene expression by pknD shuttle vector could increase the yield of L-lysine in a *Corynebacterium* host. The fermentatively prepared L-lysine are useful in pharmaceutical industry and foodstuff industry and very particularly in animal nutrition.

L15 ANSWER 4 OF 7 MEDLINE on STN DUPLICATE 1
 ACCESSION NUMBER: 2001483537 MEDLINE
 DOCUMENT NUMBER: PubMed ID: 11321586
 TITLE: Pyruvate carboxylase is a major bottleneck for glutamate and lysine production by *Corynebacterium glutamicum*.
 AUTHOR: Peters-Wendisch P G; Schiel B; Wendisch V F; Katsoulidis E; Mockel B; Sahm H; Eikmanns B J
 CORPORATE SOURCE: Dept Microbiology and Biotechnology, University of Ulm, Germany.
 SOURCE: Journal of molecular microbiology and biotechnology, (2001 Apr) 3 (2) 295-300.
 Journal code: 100892561. ISSN: 1464-1801.
 PUB. COUNTRY: England: United Kingdom
 DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
 LANGUAGE: English
 FILE SEGMENT: Priority Journals
 OTHER SOURCE: GENBANK-Y09548

ENTRY MONTH: 200108
ENTRY DATE: Entered STN: 20010903
Last Updated on STN: 20010903
Entered Medline: 20010830

AB **Corynebacterium glutamicum** possesses both phosphoenolpyruvate carboxylase (PEPCx) and **pyruvate carboxylase** (PCx) as anaplerotic enzymes for growth on carbohydrates. To analyze the significance of PCx for the amino acid production by this organism, the wild-type pyc gene, encoding PCx, was used for the construction of defined pyc-inactive and pyc-overexpressing strains and the glutamate, lysine and threonine production capabilities of these recombinant strains of *C. glutamicum* were tested in comparison to the respective host strains. No PCx activity was observed in the pyc-inactive mutants whereas the pyc-overexpressing strains showed eight-to elevenfold higher specific PCx activity when compared to the host strains. In a detergent-dependent glutamate production assay, the pyc-overexpressing strain showed more than sevenfold higher, the PCx-deficient strain about twofold lower glutamate production than the wild-type. Overexpression of the pyc gene and thus increasing the PCx activity in a lysine-producing strain of *C. glutamicum* resulted in approximately 50% higher lysine accumulation in the culture supernatant whereas inactivation of the pyc gene led to a decrease by 60%. In a threonine-producing strain of *C. glutamicum*, the overexpression of the pyc gene led to an only 10 to 20% increase in threonine production, however, to a more than 150% increase in the production of the threonine precursor homoserine. These results identify the anaplerotic PCx reaction as a major bottleneck for amino acid production by *C. glutamicum* and show that the enzyme is an important target for the molecular breeding of hyperproducing strains.

L15 ANSWER 5 OF 7 EMBASE COPYRIGHT 2004 ELSEVIER INC. ALL RIGHTS RESERVED.
on STN DUPLICATE 2

ACCESSION NUMBER: 97147233 EMBASE
DOCUMENT NUMBER: 1997147233
TITLE: **Pyruvate carboxylase as an anaplerotic enzyme in Corynebacterium glutamicum.**
AUTHOR: Peters-Wendisch P.G.; Wendisch V.F.; Paul S.; Eikmanns B.J.; Sahm H.
CORPORATE SOURCE: B.J. Eikmanns, Institut fur Biotechnologie,
Forschungszentrum Julich, D-52425 Julich, Germany.
b.eikmanns@kfa-juelich.de
SOURCE: Microbiology, (1997) 143/4 (1095-1103).
Refs: 46
ISSN: 1350-0872 CODEN: MROBEO
COUNTRY: United Kingdom
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 004 Microbiology
029 Clinical Biochemistry
LANGUAGE: English
SUMMARY LANGUAGE: English

AB The recent discovery that phosphoenolpyruvate carboxylase (PEPCx) is dispensable for growth and **lysine production** in **Corynebacterium glutamicum** implies that this organism possesses (an) alternative anaplerotic enzyme(s). In permeabilized cells of *C. glutamicum*, we detected **pyruvate carboxylase** (PCx) activity. This activity was effectively inhibited by low concentrations of ADP, AMP and acetyl-CoA. PCx activity was highest [45 ± 5 nmol min-1 (mg dry wt)-1] in cells grown on lactate or pyruvate, and was about two- to threefold lower when the cells were grown on glucose or acetate, suggesting that formation of PCx is regulated by the carbon source in the growth medium. In cells grown at low concentrations of biotin (< 5 µg l-1), PCx activity was drastically reduced, indicating that the enzyme is a biotin protein. Growth experiments with the wild-type and a defined PEPCx-negative mutant of *C. glutamicum* on glucose

showed that the **mutant** has a significantly higher demand for biotin than the wild-type, whereas both strains have the same high biotin requirement for growth on lactate and the same low biotin requirement for growth on acetate. These results indicate that (i) PCx is an essential anaplerotic enzyme for growth on glucose in the absence of PEPCx, (ii) PCx is an essential anaplerotic enzyme for growth on lactate even in the presence of PEPCx, and (iii) PCx has no anaplerotic significance for growth on acetate as the carbon source. In support of these conclusions, screening for **clones** unable to grow on a minimal medium containing lactate, but able to grow on a medium containing glucose or acetate, led to the isolation of PCx-defective **mutants** of *C. glutamicum*.

L15 ANSWER 6 OF 7 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 96:540057 SCISEARCH
THE GENUINE ARTICLE: UX143
TITLE: C-3-CARBOXYLATION AS AN ANAPLEROTIC REACTION IN
PHOSPHOENOLPYRUVATE CARBOXYLASE-DEFICIENT
CORYNEBACTERIUM-GLUTAMICUM
AUTHOR: PETERSWENDISCH P G; WENDISCH V F; DEGRAAF A A; EIKMANNS B
J (Reprint); SAHM H
CORPORATE SOURCE: KFA JULICH GMBH, FORSCHUNGSZENTRUM, INST BIOTECHNOL 1,
D-52425 JULICH, GERMANY (Reprint); KFA JULICH GMBH,
FORSCHUNGSZENTRUM, INST BIOTECHNOL 1, D-52425 JULICH,
GERMANY
COUNTRY OF AUTHOR: GERMANY
SOURCE: ARCHIVES OF MICROBIOLOGY, (JUN 1996) Vol. 165, No. 6, pp.
387-396.
ISSN: 0302-8933.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 46

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Phosphoenolpyruvate carboxylase (PEPCx) has recently been found to be dispensable as an anaplerotic enzyme for growth and **lysine production** of *Corynebacterium glutamicum*. To clarify the role of the glyoxylate cycle as a possible alternative anaplerotic sequence, defined PEPCx- and isocitrate-lyase (ICL)-negative double **mutants** of *C. glutamicum* wild-type and of the L-lysine-producing strain MH20-22B were constructed by disruption of the respective genes. Analysis of these **mutants** revealed that the growth on glucose and the **lysine productivity** were identical to that of the parental strains. These results show that PEPCx and the glyoxylate cycle are not essential for growth of *C. glutamicum* on glucose and for **lysine production** and prove the presence of another anaplerotic reaction in this organism. To study the anaplerotic pathways in *C. glutamicum* further, (HCO_3^-) $-$ C-13-labeling experiments were performed with cells of the wild-type and a PEPCx-negative strain growing on glucose. Proton nuclear magnetic resonance analysis of threonine isolated from cell protein of both strains revealed the same labeling pattern: about 37% C-13 enrichment in C-4 and 3.5% C-13 enrichment in C-1. Since the carbon backbone of threonine corresponds to that of oxaloacetate, the label in C-4 of threonine positively identifies the anaplerotic pathway as a C-3-carboxylation reaction that also takes place in the absence of PEPCx.

L15 ANSWER 7 OF 7 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 94:177461 SCISEARCH
THE GENUINE ARTICLE: MZ715
TITLE: EFFECTS OF PHOSPHOENOL PYRUVATE-CARBOXYLASE DEFICIENCY ON METABOLISM AND LYSINE PRODUCTION IN **CORYNEBACTERIUM-GLUTAMICUM**

AUTHOR: GUBLER M (Reprint); PARK S M; JETTEN M; STEPHANOPOULOS G;
SINSKEY A J
CORPORATE SOURCE: HOFFMANN LA ROCHE AG, CH-4002 BASEL, SWITZERLAND
(Reprint); MIT, DEPT BIOL, CAMBRIDGE, MA, 02139; MIT, DEPT
CHEM ENGN, CAMBRIDGE, MA, 02139
COUNTRY OF AUTHOR: SWITZERLAND; USA
SOURCE: APPLIED MICROBIOLOGY AND BIOTECHNOLOGY, (FEB 1994) Vol.
40, No. 6, pp. 857-863.
ISSN: 0175-7598.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE; AGRI
LANGUAGE: ENGLISH
REFERENCE COUNT: 33

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The phosphoenol **pyruvate carboxylase** gene (ppc) of lysine-producing **Corynebacterium glutamicum** and C. lactofermentum strains was inactivated by marker exchange mutagenesis. The **mutants** lacked completely phosphoenol **pyruvate carboxylase** (PEP carboxylase) activity, but grew in minimal medium containing glucose as the sole carbon source. In addition, the ppc(-) strains produced equivalent titers of lysine in shake flasks and in 10-l fermentation experiments as their parent strains. To address the question of how ppc(-) **Corynebacterium** strains generate oxaloacetate (OAA) for their own metabolism as well as for high-level **lysine production**, we measured the activities of enzymes leading to OAA synthesis. Whereas **pyruvate carboxylase** activity was not detected in any of the strains, phosphoenol pyruvate carboxykinase (PEP carboxykinase) activity was found to be significantly higher in C. glutamicum ppc **mutants** compared to the parent strains. On the other hand, PEP carboxykinase activity in C. lactofermentum was essentially absent. As glyoxylate cycle enzymes are strongly repressed by glucose, they are not likely to compensate for the lack of PEP carboxylase activity. PEP carboxykinase, among several candidates, could play this role.

=> d his

(FILE 'HOME' ENTERED AT 09:42:56 ON 29 MAR 2004)

FILE 'MEDLINE, EMBASE, BIOSIS, BIOTECHDS, SCISEARCH, HCAPLUS, NTIS, LIFESCI' ENTERED AT 09:43:31 ON 29 MAR 2004

L1 8583 S PYRUVATE (A) CARBOXYLASE?
L2 7190 S GLUTAMICUM
L3 415 S L1 AND L2
L4 6447994 S CLON? OR EXPRESS? OR RECOMBINANT
L5 321 S L3 AND L4
L6 7054 S CORYNEBACTERIUM(A) L2
L7 414 S L1 AND L6
L8 321 S L4 AND L7
L9 254853 S LYSINE
L10 1966 S L9(A) (PRODUCT? OR MAK? OR MANUFACTUR?)
L11 108 S L8 AND L10
L12 92 DUP REM L11 (16 DUPLICATES REMOVED)
L13 79 S L8 AND MUTANT?
L14 15 S L10 AND L13
L15 7 DUP REM L14 (8 DUPLICATES REMOVED)

=> d l12 1-92 ibib

L12 ANSWER 1 OF 92 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 2004:114571 SCISEARCH
THE GENUINE ARTICLE: 767NG
TITLE: A gene homologous to beta-type carbonic anhydrase is

AUTHOR: essential for the growth of **Corynebacterium glutamicum** under atmospheric conditions
CORPORATE SOURCE: Mitsuhashi S; Ohnishi J; Hayashi M; Ikeda M (Reprint)
Kyowa Hakko Kogyo Co Ltd, Tokyo Res Labs, Tokyo 1948533,
Japan (Reprint)
COUNTRY OF AUTHOR: Japan
SOURCE: APPLIED MICROBIOLOGY AND BIOTECHNOLOGY, (MAY 2004) Vol.
63, No. 5, pp. 592-601.
Publisher: SPRINGER-VERLAG, 175 FIFTH AVE, NEW YORK, NY
10010 USA.
ISSN: 0175-7598.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 50
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

L12 ANSWER 2 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:696453 HCAPLUS
DOCUMENT NUMBER: 139:213002
TITLE: Sequence of glbO gene from corynebacteria and use
thereof in synthesis of L-lysine
INVENTOR(S): Mockel, Bettina; Marx, Achim; Pfefferle, Walter
PATENT ASSIGNEE(S): Germany
SOURCE: U.S. Pat. Appl. Publ., 14 pp., Cont.-in-part of U.S.
Ser. No. 813,932.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|-------------|
| US 2003166173 | A1 | 20030904 | US 2002-139520 | 20020507 |
| US 2002081673 | A1 | 20020627 | US 2001-813932 | 20010322 |
| PRIORITY APPLN. INFO.: | | | US 2000-585642 | B2 20000602 |
| | | | US 2001-813932 | A2 20010322 |

L12 ANSWER 3 OF 92 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 2003:903474 SCISEARCH
THE GENUINE ARTICLE: 732TC
TITLE: Fructose-1,6-bisphosphatase from **Corynebacterium glutamicum**: expression and deletion of
the fbp gene and biochemical characterization of the
enzyme
AUTHOR: Rittmann D; Schaffer S; Wendisch V F (Reprint); Sahm H
CORPORATE SOURCE: KFA Julich GmbH, Forschungszentrum, Inst Biotechnol 1,
Postfach 1913, D-52425 Julich, Germany (Reprint); KFA
Julich GmbH, Forschungszentrum, Inst Biotechnol 1, D-52425
Julich, Germany
COUNTRY OF AUTHOR: Germany
SOURCE: ARCHIVES OF MICROBIOLOGY, (OCT 2003) Vol. 180, No. 4, pp.
285-292.
Publisher: SPRINGER-VERLAG, 175 FIFTH AVE, NEW YORK, NY
10010 USA.
ISSN: 0302-8933.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 47
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

L12 ANSWER 4 OF 92 MEDLINE on STN
ACCESSION NUMBER: 2003016605 MEDLINE
DOCUMENT NUMBER: PubMed ID: 12523389

TITLE: Biotechnological manufacture of lysine.
AUTHOR: Pfefferle Walter; Mockel Bettina; Bathe Brigitte; Marx Achim
CORPORATE SOURCE: Degussa AG, Feed Additives Division, R&D Feed Additives/Biotechnology, Kantstrasse 2, 33790 Hale-Kuensebeck, Germany.. walter.pfefferle@degussa.com
SOURCE: Advances in biochemical engineering/biotechnology, (2003) 79 59-112. Ref: 198
PUB. COUNTRY: Journal code: 8307733. ISSN: 0724-6145. Germany: Germany, Federal Republic of
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
General Review; (REVIEW)
(REVIEW, TUTORIAL)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200302
ENTRY DATE: Entered STN: 20030114
Last Updated on STN: 20030215
Entered Medline: 20030214

L12 ANSWER 5 OF 92 MEDLINE on STN DUPLICATE 1
ACCESSION NUMBER: 2003228790 MEDLINE
DOCUMENT NUMBER: PubMed ID: 12749842
TITLE: Engineering metabolism and product formation in **Corynebacterium glutamicum** by coordinated gene overexpression.
AUTHOR: Koffas Mattheos A G; Jung Gyoo Yeol; Stephanopoulos Gregory
CORPORATE SOURCE: Department of Chemical Engineering, Massachusetts Institute of Technology, Room 56-469 77, Cambridge, MA 02139, USA.. gregstep@mit.edu
SOURCE: Metabolic engineering, (2003 Jan) 5 (1) 32-41.
Journal code: 9815657. ISSN: 1096-7176.
PUB. COUNTRY: United States
DOCUMENT TYPE: (EVALUATION STUDIES)
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200401
ENTRY DATE: Entered STN: 20030517
Last Updated on STN: 20040123
Entered Medline: 20040122

L12 ANSWER 6 OF 92 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
ACCESSION NUMBER: 2002-15776 BIOTECHDS
TITLE: Novel polynucleotide from Coryneform bacteria coding for PPGK gene, useful as hybridization probe for detecting DNA to isolate nucleic acids, polynucleotides or genes coding for transcription activator ppgK;
recombinant **Corynebacterium glutamicum** production useful for L-amino acid production, especially L-lysine production
AUTHOR: BATHE B; MARTENS M; HERMANN T
PATENT ASSIGNEE: DEGUSSA AG
PATENT INFO: WO 2002026755 4 Apr 2002
APPLICATION INFO: WO 2000-EP9784 26 Sep 2000
PRIORITY INFO: DE 2000-1047403 26 Sep 2000
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: WPI: 2002-444014 [47]

L12 ANSWER 7 OF 92 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
ACCESSION NUMBER: 2002-12968 BIOTECHDS
TITLE: New ppsA gene of Coryneform bacteria, useful when

overexpressed, for increasing fermentative production of L-amino acids, encodes a phosphoenol pyruvate synthase; vector-mediated pyruvate-water-dikinase gene transfer and expression in Coryneform glutamicum for enzyme activity enhancement for L-lysine production

AUTHOR: MOECKEL B; MARX A; BASTUCK C; BUCHHOLZ M; PFEFFERLE W
PATENT ASSIGNEE: DEGUSSA AG
PATENT INFO: WO 2002022829 21 Mar 2002
APPLICATION INFO: WO 2000-EP9456 13 Sep 2000
PRIORITY INFO: DE 2000-1045497 13 Sep 2000
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: WPI: 2002-362348 [39]

L12 ANSWER 8 OF 92 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
ACCESSION NUMBER: 2002-13248 BIOTECHDS

TITLE: Novel polynucleotide from coryneform bacteria coding for phosphotransferase system enzyme I, useful for isolating nucleic acids, polynucleotides or genes which code for phosphotransferase system enzyme I;
bacterium strain improvement useful for L-amino acid, especially L-lysine, production

AUTHOR: MOECKEL B; HANS S; SCHISCHKA N; PFEFFERLE W
PATENT ASSIGNEE: DEGUSSA AG
PATENT INFO: WO 2002022827 21 Mar 2002
APPLICATION INFO: WO 2000-EP10072 13 Sep 2000
PRIORITY INFO: DE 2000-1045496 13 Sep 2000
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: WPI: 2002-383131 [41]

L12 ANSWER 9 OF 92 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
ACCESSION NUMBER: 2002-13334 BIOTECHDS

TITLE: New pknD gene of Coryneform bacteria, useful when overexpressed, for increasing fermentative production of L-amino acids, encodes a protein kinase D protein; plasmid pK18mobsac-pknD-XuctionL-mediated enzyme gene transfer and expression in Escherichia coli and Corynebacterium glutamicum for L-lysine production

AUTHOR: BATHE B; SCHROEDER I; FARWICK M; HERMANN T
PATENT ASSIGNEE: DEGUSSA AG
PATENT INFO: WO 2002022632 21 Mar 2002
APPLICATION INFO: WO 2000-EP10210 12 Sep 2000
PRIORITY INFO: DE 2001-1020094 25 Apr 2001
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: WPI: 2002-371967 [40]

L12 ANSWER 10 OF 92 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
ACCESSION NUMBER: 2002-11054 BIOTECHDS

TITLE: Novel polynucleotide from Coryneform bacteria coding for lysR3 gene, useful as a probe for detecting DNA to isolate nucleic acids coding for transcription regulator lysR3 or for producing L-amino acids, e.g., L-lysine and L-valine;
bacterium recombinant protein gene, vector expression in host cell, for L-valine and L-lysine production

AUTHOR: MOECKEL B; KREUTZER C
PATENT ASSIGNEE: DEGUSSA AG
PATENT INFO: WO 2002012505 14 Feb 2002
APPLICATION INFO: WO 2000-EP7765 10 Aug 2000
PRIORITY INFO: US 2001-867537 31 May 2001

DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: WPI: 2002-227156 [28]

L12 ANSWER 11 OF 92 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
ACCESSION NUMBER: 2003-00063 BIOTECHDS

TITLE: Novel polynucleotides from **Corynebacterium glutamicum** useful for inducing and regulating expression of genes, including those that are involved in amino acid biosynthesis, in bacterial cells; recombinant protein production via plasmid expression in host cell for enzyme transcription regulation and amino acid production

AUTHOR: RAYAPATI P J; CRAFTON C M
PATENT ASSIGNEE: RAYAPATI P J; CRAFTON C M
PATENT INFO: WO 2002040679 23 May 2002
APPLICATION INFO: WO 2001-US43096 '15 Nov 2001
PRIORITY INFO: US 2000-248219 15 Nov 2000; US 2000-248219 15 Nov 2000
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: WPI: 2002-575217 [61]

L12 ANSWER 12 OF 92 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
ACCESSION NUMBER: 2002-17445 BIOTECHDS

TITLE: New hemD and hemB genes and polypeptides of coryneform bacteria, useful, when overexpressed, for increasing fermentative production of amino acids; plasmid-mediated uroporphyrinogen-III synthase and delta-aminolevulinic acid dehydratase gene transfer and expression in **Corynebacterium glutamicum** for L-lysine production

AUTHOR: FARWICK M; HUTHMACHER K; SCHISCHKA N; MARX A; PFEFFERLE W
PATENT ASSIGNEE: DEGUSSA AG
PATENT INFO: DE 10145585 2 May 2002
APPLICATION INFO: DE 2000-1045585 28 Oct 2000
PRIORITY INFO: DE 2000-1053708 28 Oct 2000
DOCUMENT TYPE: Patent
LANGUAGE: German
OTHER SOURCE: WPI: 2002-445647 [48]

L12 ANSWER 13 OF 92 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
ACCESSION NUMBER: 2002-15600 BIOTECHDS

TITLE: New tmk gene of Coryneform bacteria, useful when suppressed, for increasing fermentative production of L-amino acids, encodes a thymidylate kinase; L-lysine production by recombinant **Corynebacterium glutamicum** useful for food, medicine and pharmaceutical industry

AUTHOR: FARWICK M; HUTHMACHER K; MARX A; PFEFFERLE W
PATENT ASSIGNEE: DEGUSSA AG
PATENT INFO: DE 10140095 28 Mar 2002
APPLICATION INFO: DE 2000-1040095 19 Sep 2000
PRIORITY INFO: DE 2000-1046235 19 Sep 2000
DOCUMENT TYPE: Patent
LANGUAGE: German
OTHER SOURCE: WPI: 2002-341601 [38]

L12 ANSWER 14 OF 92 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN

ACCESSION NUMBER: 2003-07731 BIOTECHDS
TITLE: New metD gene of coryneform bacteria, useful when suppressed, for increasing fermentative production of L-amino acids, e.g. for animal nutrition;

Corynebacterium glutamicum
fermentation for methionine and lysine
production

AUTHOR: REY D; RUECKERT C; BATHE B; HUTHMACHER K; PFEFFERLE W;
PUEHLER A; KALINOWSKI J

PATENT ASSIGNEE: DEGUSSA AG

PATENT INFO: DE 10126164 5 Dec 2002

APPLICATION INFO: DE 2001-1026164 30 May 2001

PRIORITY INFO: DE 2001-1026164 30 May 2001; DE 2001-1026164 30 May 2001

DOCUMENT TYPE: Patent

LANGUAGE: German

OTHER SOURCE: WPI: 2003-141912 [14]

L12 ANSWER 15 OF 92 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
ACCESSION NUMBER: 2002-16217 BIOTECHDS
TITLE: New ccpA2 gene from coryneform bacteria, useful, when
suppressed, for increasing fermentative production of L-amino
acids, particularly lysine;
metabolic engineering for L-lysine
production in *Corynebacterium*
glutamicum

AUTHOR: MOECKEL B; KREUTZER C; HERMANN T; FARWICK M; MARX A;
PFEFFERLE W

PATENT ASSIGNEE: DEGUSSA AG

PATENT INFO: DE 10123071 7 Mar 2002

APPLICATION INFO: DE 2000-1023071 26 Aug 2000

PRIORITY INFO: DE 2000-1042053 26 Aug 2000

DOCUMENT TYPE: Patent

LANGUAGE: German

OTHER SOURCE: WPI: 2002-363955 [40]

L12 ANSWER 16 OF 92 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
ACCESSION NUMBER: 2003-07033 BIOTECHDS
TITLE: New isolated polynucleotide from coryneform bacteria, useful
for increasing production of amino acids, comprises extended
genes for 1- or 6- phosphofructokinase;
lysine production by
Corynebacterium glutamicum

AUTHOR: FARWICK M; BATHE B; BREHME J; HUTHMACHER K

PATENT ASSIGNEE: DEGUSSA AG

PATENT INFO: DE 10112992 26 Sep 2002

APPLICATION INFO: DE 2001-1012992 17 Mar 2001

PRIORITY INFO: DE 2001-1012992 17 Mar 2001; DE 2001-1012992 17 Mar 2001

DOCUMENT TYPE: Patent

LANGUAGE: German

OTHER SOURCE: WPI: 2003-141736 [14]

L12 ANSWER 17 OF 92 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
ACCESSION NUMBER: 2002-14317 BIOTECHDS
TITLE: New cstA gene from coryneform bacteria, useful, when
overexpressed, for increasing fermentative production of
L-amino acids e.g. lysine and as hybridization probe;
carbon starvation protein-A cstA gene overexpression via
vector expression in host cell for L-
lysine production

AUTHOR: MOECKEL B; MARX A; HERMANN T; FARWICK M; PFEFFERLE W

PATENT ASSIGNEE: DEGUSSA AG

PATENT INFO: DE 10042051 7 Mar 2002

APPLICATION INFO: DE 2000-1042051 26 Aug 2000

PRIORITY INFO: DE 2000-1042051 26 Aug 2000

DOCUMENT TYPE: Patent

LANGUAGE: German

OTHER SOURCE: WPI: 2002-293372 [34]

L12 ANSWER 18 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:332215 HCAPLUS
 DOCUMENT NUMBER: 136:354247
 TITLE: Sequences of hemD and hmB gene from corynebacteria and
 use thereof in production of L-lysine
 INVENTOR(S): Farwick, Mike; Huthmacher, Klaus; Pfefferle, Walter;
 Schischka, Natalie; Marx, Achim
 PATENT ASSIGNEE(S): Degussa AG, Germany
 SOURCE: PCT Int. Appl., 49 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|---|----------|--------------------|----------|
| WO 2002034775 | A2 | 20020502 | WO 2001-EP11705 | 20011010 |
| WO 2002034775 | A3 | 20020919 | | |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL,
PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG,
UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| DE 10145585 | A1 | 20020502 | DE 2001-10145585 | 20010915 |
| AU 2002018223 | A5 | 20020506 | AU 2002-18223 | 20011010 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10053708 A | 20001028 |
| | | | DE 2001-10145585 A | 20010915 |
| | | | WO 2001-EP11705 W | 20011010 |

L12 ANSWER 19 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:256495 HCAPLUS
 DOCUMENT NUMBER: 136:293614
 TITLE: Sequence of mikE17 gene from corynebacteria and use
 thereof in synthesis of L-lysine
 INVENTOR(S): Farwick, Mike; Huthmacher, Klaus; Pfefferle, Walter
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 44 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|---|----------|--------------------|----------|
| WO 2002027009 | A1 | 20020404 | WO 2001-EP8781 | 20010728 |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,
RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ,
VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| DE 10113958 | A1 | 20020418 | DE 2001-10113958 | 20010322 |
| US 2002106749 | A1 | 20020808 | US 2001-825293 | 20010404 |
| AU 2001095445 | A5 | 20020408 | AU 2001-95445 | 20010728 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10047867 A | 20000927 |

DE 2001-10113958 A 20010322

WO 2001-EP8781 W 20010728

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 20 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:256486 HCAPLUS
DOCUMENT NUMBER: 136:275995
TITLE: The dep67 gene of Corynebacterium encoding an efflux protein for use in engineering lysine biosynthesis
INVENTOR(S): Farwick, Mike; Huthmacher, Klaus; Hermann, Thomas; Bathe, Brigitte; Pfefferle, Walter
PATENT ASSIGNEE(S): Degussa A.-G., Germany
SOURCE: PCT Int. Appl., 42 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|--|----------|--------------------|------------|
| WO 2002027000 | A1 | 20020404 | WO 2001-EP10942 | 20010921 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| DE 10047866 | A1 | 20020411 | DE 2000-10047866 | 20000927 |
| AU 2001095580 | A5 | 20020408 | AU 2001-95580 | 20010921 |
| US 2002086374 | A1 | 20020704 | US 2001-963679 | 20010927 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10047866 A | 20000927 |
| | | | WO 2001-EP10942 | W 20010921 |

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 21 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:256478 HCAPLUS
DOCUMENT NUMBER: 136:278228
TITLE: The cobW gene of Corynebacterium encoding a cobalamin synthesis related protein for use in engineering lysine biosynthesis
INVENTOR(S): Farwick, Mike; Huthmacher, Klaus; Schischka, Natalie; Pfefferle, Walter
PATENT ASSIGNEE(S): Degussa A.-G., Germany
SOURCE: PCT Int. Appl., 41 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|-----------------|----------|
| WO 2002026992 | A1 | 20020404 | WO 2001-EP8989 | 20010803 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, | | | | |

VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
 DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
 BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
 DE 10117815 A1 20020418 DE 2001-10117815 20010410
 AU 2001091729 A5 20020408 AU 2001-91729 20010803
 EP 1320610 A1 20030625 EP 2001-971862 20010803
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
 US 2002102668 A1 20020801 US 2001-946785 20010906
 PRIORITY APPLN. INFO.: DE 2000-10047863 A 20000927
 DE 2001-10117815 A 20010410
 WO 2001-EP8989 W 20010803
 REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 22 OF 92 HCPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:256476 HCPLUS
 DOCUMENT NUMBER: 136:293613
 TITLE: Sequences of msIK gene from corynebacteria and use
 thereof in production of L-lysine
 INVENTOR(S): Bathe, Brigitte; Schischka, Natalie; Farwick, Mike;
 Pfefferle, Walter
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 33 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|---|---|--------------------|----------|
| WO 2002026989 | A1 | 20020404 | WO 2001-EP10770 | 20010918 |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL,
PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG,
UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| DE 10047404 | A1 | 20020411 | DE 2000-10047404 | 20000926 |
| AU 2002014980 | A5 | 20020408 | AU 2002-14980 | 20010918 |
| EP 1320608 | A1 | 20030625 | EP 2001-983483 | 20010918 |
| R: | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | |
| US 2002103357 | A1 | 20020801 | US 2001-962618 | 20010926 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10047404 A | 20000926 |
| | | | WO 2001-EP10770 W | 20010918 |
| REFERENCE COUNT: | 3 | THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT | | |

L12 ANSWER 23 OF 92 HCPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:256307 HCPLUS
 DOCUMENT NUMBER: 136:293612
 TITLE: Sequence of deaD gene from corynebacteria and use
 thereof in synthesis of L-lysine
 INVENTOR(S): Farwick, Mike; Huthmacher, Klaus; Brehme, Jennifer;
 Pfefferle, Walter
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 52 pp.
 CODEN: PIXXD2

DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|------------------|----------|
| WO 2002026787 | A1 | 20020404 | WO 2001-EP10772 | 20010918 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL,
PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG,
UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| DE 10047865 | A1 | 20020418 | DE 2000-10047865 | 20000927 |
| AU 2001093821 | A5 | 20020408 | AU 2001-93821 | 20010918 |
| EP 1320544 | A1 | 20030625 | EP 2001-974264 | 20010918 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |
| US 2002115161 | A1 | 20020822 | US 2001-963790 | 20010927 |

PRIORITY APPLN. INFO.:

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 24 OF 92 HCPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:256306 HCPLUS
 DOCUMENT NUMBER: 136:293611
 TITLE: Sequences of truB gene from corynebacteria and use thereof in production of L-lysine
 INVENTOR(S): Farwick, Mike; Huthmacher, Klaus; Pfefferle, Walter;
Bathe, Brigitte
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 44 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|------------------|----------|
| WO 2002026786 | A1 | 20020404 | WO 2001-EP10771 | 20010918 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL,
PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG,
UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| DE 10047864 | A1 | 20020411 | DE 2000-10047864 | 20000927 |
| AU 2002012255 | A5 | 20020408 | AU 2002-12255 | 20010918 |
| US 2002115160 | A1 | 20020822 | US 2001-963690 | 20010927 |

PRIORITY APPLN. INFO.:

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 25 OF 92 HCPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:240987 HCAPLUS
 DOCUMENT NUMBER: 136:278224
 TITLE: Sequence of pepC gene from corynebacteria and use thereof in synthesis of L-lysine
 INVENTOR(S): Farwick, Mike; Huthmacher, Klaus; Bathe, Brigitte;
 Rieping, Mechthild; Pfefferle, Walter
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 43 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|------------------|----------|
| WO 2002024928 | A1 | 20020328 | WO 2001-EP8708 | 20010727 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,
RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ,
VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| DE 10108828 | A1 | 20020328 | DE 2001-10108828 | 20010223 |
| US 2002098554 | A1 | 20020725 | US 2001-804073 | 20010313 |
| AU 2001089765 | A5 | 20020402 | AU 2001-89765 | 20010727 |
| DE 2000-10046229 A 20000919
DE 2001-10108828 A 20010223
WO 2001-EP8708 W 20010727 | | | | |

PRIORITY APPLN. INFO.:
 REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 26 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:240981 HCAPLUS
 DOCUMENT NUMBER: 136:278223
 TITLE: Sequence of def gene from corynebacteria and use thereof in synthesis of L-lysine
 INVENTOR(S): Farwick, Mike; Huthmacher, Klaus; Brehme, Jennifer;
 Pfefferle, Walter
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 41 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|------------------|----------|
| WO 2002024922 | A1 | 20020328 | WO 2001-EP8602 | 20010725 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,
RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ,
VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| DE 10113957 | A1 | 20020411 | DE 2001-10113957 | 20010322 |
| US 2002106750 | A1 | 20020808 | US 2001-825345 | 20010404 |

| | | | | |
|------------------------|----|--|--------------------|----------|
| AU 2001082023 | A5 | 20020402 | AU 2001-82023 | 20010725 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10046228 A | 20000919 |
| | | | DE 2001-10113957 A | 20010322 |
| | | | WO 2001-EP8602 W | 20010725 |
| REFERENCE COUNT: | 4 | THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT | | |

L12 ANSWER 27 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:240978 HCAPLUS
 DOCUMENT NUMBER: 136:278222
 TITLE: Sequences of thyA gene from corynebacteria and use thereof in production of L-lysine
 INVENTOR(S): Marx, Achim; Schischka, Natalie; Bathe, Brigitte; Farwick, Mike
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 44 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|--|----------|--------------------|----------|
| WO 2002024919 | A1 | 20020328 | WO 2001-EP9170 | 20010808 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| DE 10133162 | A1 | 20020404 | DE 2001-10133162 | 20010707 |
| AU 2001079809 | A5 | 20020402 | AU 2001-79809 | 20010808 |
| EP 1319076 | A1 | 20030618 | EP 2001-958061 | 20010808 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |
| US 2002107379 | A1 | 20020808 | US 2001-954197 | 20010918 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10046626 A | 20000920 |
| | | | DE 2001-10133162 A | 20010707 |
| | | | WO 2001-EP9170 W | 20010808 |

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 28 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:240974 HCAPLUS
 DOCUMENT NUMBER: 136:278221
 TITLE: Sequences of dctA gene from corynebacteria and use thereof in production of L-lysine
 INVENTOR(S): Farwick, Mike; Huthmacher, Klaus; Bathe, Brigitte; Hermann, Thomas; Pfefferle, Walter
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 45 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|----------|
| WO 2002024915 | A1 | 20020328 | WO 2001-EP9099 | 20010807 |

WO 2002024915 C1 20020613
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,
RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ,
VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

DE 10132724 A1 20020411 DE 2001-10132724 20010705
AU 2001093731 A5 20020402 AU 2001-93731 20010807
US 2002106759 A1 20020808 US 2001-951780 20010914

PRIORITY APPLN. INFO.: DE 2000-10046230 A 20000919
DE 2001-10132724 A 20010705
WO 2001-EP9099 W 20010807

REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 29 OF 92 HCPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:240941 HCPLUS
DOCUMENT NUMBER: 136:278220
TITLE: Sequences of ndkA gene from corynebacteria and use thereof in production of L-lysine
INVENTOR(S): Bathe, Brigitte; Bastuck, Christine; Marx, Achim;
Hermann, Thomas
PATENT ASSIGNEE(S): Degussa A.-G., Germany
SOURCE: PCT Int. Appl., 39 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|--------------------|----------|
| WO 2002024880 | A1 | 20020328 | WO 2001-EP10527 | 20010912 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL,
PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG,
UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| DE 10046625 | A1 | 20020411 | DE 2000-10046625 | 20000920 |
| AU 2001085947 | A5 | 20020402 | AU 2001-85947 | 20010912 |
| EP 1319065 | A1 | 20030618 | EP 2001-965276 | 20010912 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |
| US 2002090685 | A1 | 20020711 | US 2001-955286 | 20010919 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10046625 A | 20000920 |
| | | | WO 2001-EP10527 W | 20010912 |

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 30 OF 92 HCPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:240813 HCPLUS
DOCUMENT NUMBER: 136:278218
TITLE: Sequences of dps gene from corynebacteria and use thereof in production of L-lysine
INVENTOR(S): Bathe, Brigitte; Kreutzer, Caroline; Rieping,
Mechthild; Marx, Achim; Farwick, Mike; Pfefferle,

PATENT ASSIGNEE(S) : Walter
 SOURCE : Degussa A.-G., Germany
 DOCUMENT TYPE : Patent
 LANGUAGE : English
 FAMILY ACC. NUM. COUNT : 1
 PATENT INFORMATION :

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|-------------------------|--|--|--------------------|----------|
| WO 2002024737 | A1 | 20020328 | WO 2001-EP10523 | 20010912 |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| DE 10046623 | A1 | 20020328 | DE 2000-10046623 | 20000920 |
| AU 2002012232 | A5 | 20020402 | AU 2002-12232 | 20010912 |
| EP 1319019 | A1 | 20030618 | EP 2001-980373 | 20010912 |
| R: | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | |
| US 2002106760 | A1 | 20020808 | US 2001-955315 | 20010919 |
| PRIORITY APPLN. INFO. : | | | DE 2000-10046623 A | 20000920 |
| | | | WO 2001-EP10523 W | 20010912 |
| REFERENCE COUNT : | 5 | THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT | | |

L12 ANSWER 31 OF 92 HCPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER : 2002:240792 HCPLUS
 DOCUMENT NUMBER : 136:278217
 TITLE : Sequence of tmk gene from corynebacteria and use thereof in synthesis of L-lysine
 INVENTOR(S) : Farwick, Mike; Huthmacher, Klaus; Marx, Achim;
 Pfefferle, Walter
 PATENT ASSIGNEE(S) : Degussa A.-G., Germany
 SOURCE : PCT Int. Appl., 43 pp.
 DOCUMENT TYPE : Patent
 LANGUAGE : English
 FAMILY ACC. NUM. COUNT : 1
 PATENT INFORMATION :

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|--|----------|------------------|----------|
| WO 2002024716 | A2 | 20020328 | WO 2001-EP10268 | 20010906 |
| WO 2002024716 | A3 | 20021205 | | |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| DE 10140095 | A1 | 20020328 | DE 2001-10140095 | 20010816 |
| AU 2002014966 | A5 | 20020402 | AU 2002-14966 | 20010906 |
| EP 1319077 | A2 | 20030618 | EP 2001-983465 | 20010906 |
| R: | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, | | | |

| | | | | |
|--|--------------------|----------|--|--|
| IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |
| US 2002137065 A1 20020926 | US 2001-955203 | 20010919 | | |
| PRIORITY APPLN. INFO.: | DE 2000-10046235 A | 20000919 | | |
| | DE 2001-10140095 A | 20010816 | | |
| | WO 2001-EP10268 W | 20010906 | | |

L12 ANSWER 32 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:220807 HCAPLUS
 DOCUMENT NUMBER: 136:261909
 TITLE: Sequence of dep34 gene from corynebacteria and use thereof in synthesis of L-lysine
 INVENTOR(S): Farwick, Mike; Huthmacher, Klaus; Pfefferle, Walter; Hermann, Thomas; Bathe, Brigitte
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 42 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|--|----------|--------------------|----------|
| WO 2002022843 | A2 | 20020321 | WO 2001-EP9313 | 20010811 |
| WO 2002022843 | A3 | 20020711 | | |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| DE 10112429 | A1 | 20020321 | DE 2001-10112429 | 20010315 |
| AU 2002019032 | A5 | 20020326 | AU 2002-19032 | 20010811 |
| EP 1315815 | A2 | 20030604 | EP 2001-984655 | 20010811 |
| R: | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | |
| US 2002106757 | A1 | 20020808 | US 2001-946763 | 20010906 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10044708 A | 20000909 |
| | | | DE 2001-10112429 A | 20010315 |
| | | | WO 2001-EP9313 W | 20010811 |

L12 ANSWER 33 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:220796 HCAPLUS
 DOCUMENT NUMBER: 136:261907
 TITLE: Sequences of pknB gene from corynebacteria and use thereof in production of L-lysine
 INVENTOR(S): Bathe, Brigitte; Hans, Stephan; Farwick, Mike; Hermann, Thomas
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 46 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|---|----------|-----------------|----------|
| WO 2002022828 | A1 | 20020321 | WO 2001-EP10211 | 20010905 |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, | | | |

GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
 LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL,
 PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG,
 UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
 DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
 BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
 DE 10120095 A1 20020328 DE 2001-10120095 20010425
 AU 2001082132 A5 20020326 AU 2001-82132 20010905
 EP 1317547 A1 20030611 EP 2001-960723 20010905
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
 US 2002042105 A1 20020411 US 2001-949970 20010912
 PRIORITY APPLN. INFO.: DE 2000-10044912 A 20000912
 DE 2001-10120095 A 20010425
 US 2001-297250P P 20010612
 WO 2001-EP10211 W 20010905
 REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 34 OF 92 HCPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:220783 HCPLUS
 DOCUMENT NUMBER: 136:261905
 TITLE: Sequence of atr43 gene from corynebacteria and use
 thereof in synthesis of L-lysine
 INVENTOR(S): Farwick, Mike; Huthmacher, Klaus; Pfefferle, Walter
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 41 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|---|----------|--------------------|----------|
| WO 2002022814 | A2 | 20020321 | WO 2001-EP8650 | 20010726 |
| WO 2002022814 | A3 | 20020516 | | |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,
RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ,
VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| DE 10123070 | A1 | 20020411 | DE 2001-10123070 | 20010511 |
| AU 2001078509 | A5 | 20020326 | AU 2001-78509 | 20010726 |
| US 2002142404 | A1 | 20021003 | US 2001-951768 | 20010914 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10045580 A | 20000915 |
| | | | DE 2001-10123070 A | 20010511 |
| | | | WO 2001-EP8650 W | 20010726 |

L12 ANSWER 35 OF 92 HCPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:220646 HCPLUS
 DOCUMENT NUMBER: 136:261904
 TITLE: Sequences of ccsB gene from corynebacteria and use
 thereof in production of L-lysine
 INVENTOR(S): Farwick, Mike; Huthmacher, Klaus; Pfefferle, Walter;
 Bathe, Brigitte; Hermann, Thomas
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 34 pp.
 CODEN: PIXXD2

DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|--|------------------|----------|
| WO 2002022672 | A1 | 20020321 | WO 2001-EP9457 | 20010816 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,
RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ,
VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| DE 10045487 | A1 | 20020411 | DE 2000-10045487 | 20000914 |
| AU 2001079818 | A5 | 20020326 | AU 2001-79818 | 20010816 |
| EP 1317482 | A1 | 20030611 | EP 2001-958077 | 20010816 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |
| US 2002048795 | A1 | 20020425 | US 2001-946143 | 20010905 |
| PRIORITY APPLN. INFO.: DE 2000-10045487 A 20000914
WO 2001-EP9457 W 20010816 | | | | |
| REFERENCE COUNT: | 6 | THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT | | |

L12 ANSWER 36 OF 92 HCPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:220645 HCPLUS
 DOCUMENT NUMBER: 136:261903
 TITLE: Sequence of *pstC2* gene from corynebacteria and use thereof in synthesis of L-lysine
 INVENTOR(S): Farwick, Mike; Huthmacher, Klaus; Pfefferle, Walter;
Brehme, Jennifer
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 34 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|--|------------------|----------|
| WO 2002022671 | A1 | 20020321 | WO 2001-EP9455 | 20010816 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,
RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ,
VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| DE 10045486 | A1 | 20020411 | DE 2000-10045486 | 20000914 |
| AU 2001089807 | A5 | 20020326 | AU 2001-89807 | 20010816 |
| US 2002106751 | A1 | 20020808 | US 2001-951769 | 20010914 |
| PRIORITY APPLN. INFO.: DE 2000-10045486 A 20000914
WO 2001-EP9455 W 20010816 | | | | |
| REFERENCE COUNT: | 6 | THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT | | |

L12 ANSWER 37 OF 92 HCPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:220644 HCAPLUS
 DOCUMENT NUMBER: 136:261902
 TITLE: Sequences of ftsX gene from corynebacteria and use thereof in production of L-lysine
 INVENTOR(S): Farwick, Mike; Huthmacher, Klaus; Pfefferle, Walter;
 Brehme, Jennifer; Rieping, Mechthild
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 46 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|--|----------|--------------------|----------|
| WO 2002022670 | A1 | 20020321 | WO 2001-EP9375 | 20010814 |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| DE 10132176 | A1 | 20020321 | DE 2001-10132176 | 20010703 |
| AU 2001087682 | A5 | 20020326 | AU 2001-87682 | 20010814 |
| US 2002107377 | A1 | 20020808 | US 2001-946769 | 20010906 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10044944 A | 20000912 |
| | | | DE 2001-10132176 A | 20010703 |
| | | | WO 2001-EP9375 W | 20010814 |

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 38 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:220643 HCAPLUS
 DOCUMENT NUMBER: 136:261901
 TITLE: Sequence of sugA gene from corynebacteria and use thereof in synthesis of L-lysine
 INVENTOR(S): Farwick, Mike; Huthmacher, Klaus; Pfefferle, Walter;
 Hermann, Thomas; Marx, Achim
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 42 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|--|----------|------------------|----------|
| WO 2002022669 | A1 | 20020321 | WO 2001-EP9164 | 20010808 |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| DE 10108839 | A1 | 20020328 | DE 2001-10108839 | 20010223 |
| AU 2001093741 | A5 | 20020326 | AU 2001-93741 | 20010808 |

| | | | | |
|--|----|----------|--------------------|----------|
| EP 1326889 | A1 | 20030716 | EP 2001-974139 | 20010808 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |
| US 2002127661 | A1 | 20020912 | US 2001-951753 | 20010914 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10045485 A | 20000914 |
| | | | DE 2001-10108839 A | 20010223 |
| | | | WO 2001-EP9164 W | 20010808 |

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 39 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:220642 HCAPLUS
 DOCUMENT NUMBER: 136:261900
 TITLE: Sequences of rodA gene from corynebacteria and use thereof in production of L-lysine
 INVENTOR(S): Farwick, Mike; Huthmacher, Klaus; Pfefferle, Walter;
 Bathe, Brigitte
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 46 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|--------------------|----------|
| WO 2002022668 | A1 | 20020321 | WO 2001-EP9097 | 20010807 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,
RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ,
VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| DE 10132947 | A1 | 20020321 | DE 2001-10132947 | 20010706 |
| AU 2001085878 | A5 | 20020326 | AU 2001-85878 | 20010807 |
| US 2002051993 | A1 | 20020502 | US 2001-950071 | 20010912 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10044943 A | 20000912 |
| | | | DE 2001-10132947 A | 20010706 |
| | | | WO 2001-EP9097 W | 20010807 |

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 40 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:220640 HCAPLUS
 DOCUMENT NUMBER: 136:261899
 TITLE: Sequence of gorA gene from corynebacteria and use thereof in synthesis of L-lysine
 INVENTOR(S): Farwick, Mike; Huthmacher, Klaus; Pfefferle, Walter;
 Marx, Achim
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 38 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|----------|
| WO 2002022666 | A2 | 20020321 | WO 2001-EP9314 | 20010811 |

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
 CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
 GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
 LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,
 RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ,
 VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
 DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
 BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
 DE 10109023 A1 20020328 DE 2001-10109023 20010224
 AU 2001095456 A5 20020326 AU 2001-95456 20010811
 EP 1317546 A2 20030611 EP 2001-976069 20010811
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
 US 2002106758 A1 20020808 US 2001-946764 20010906
 PRIORITY APPLN. INFO.: DE 2000-10044946 A 20000912
 DE 2001-10109023 A 20010224
 WO 2001-EP9314 W 20010811

L12 ANSWER 41 OF 92 HCPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:220608 HCPLUS
 DOCUMENT NUMBER: 136:261898
 TITLE: Sequences of atr61 gene from corynebacteria and use
 thereof in production of L-lysine
 INVENTOR(S): Farwick, Mike; Huthmacher, Klaus; Pfefferle, Walter
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 38 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|------------------|----------|
| WO 2002022633 | A2 | 20020321 | WO 2001-EP10522 | 20010912 |
| WO 2002022633 | A3 | 20020530 | | |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL,
PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG,
UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| DE 10045579 | A1 | 20020411 | DE 2000-10045579 | 20000915 |
| AU 2001093808 | A5 | 20020326 | AU 2001-93808 | 20010912 |
| US 2002115159 | A1 | 20020822 | US 2001-953259 | 20010917 |
| PRIORITY APPLN. INFO.: DE 2000-10045579 A 20000915
WO 2001-EP10522 W 20010912 | | | | |

L12 ANSWER 42 OF 92 HCPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:185334 HCPLUS
 DOCUMENT NUMBER: 136:246479
 TITLE: Sequence of luxS gene from corynebacteria and use
 thereof in synthesis of L-lysine
 INVENTOR(S): Bathe, Brigitte; Kreutzer, Caroline; Marx, Achim;
 Pfefferle, Walter
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 40 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|--|----------|--------------------|----------|
| WO 2002020799 | A2 | 20020314 | WO 2001-EP9095 | 20010807 |
| WO 2002020799 | A3 | 20020530 | | |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| DE 10112105 | A1 | 20020321 | DE 2001-10112105 | 20010314 |
| US 2002182689 | A1 | 20021205 | US 2001-824551 | 20010801 |
| AU 2001087664 | A5 | 20020322 | AU 2001-87664 | 20010807 |
| EP 1315818 | A2 | 20030604 | EP 2001-967238 | 20010807 |
| R: | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | |
| PRIORITY APPLN. INFO.: | | | DE 2000-10044755 A | 20000909 |
| | | | DE 2001-10112105 A | 20010314 |
| | | | WO 2001-EP9095 W | 20010807 |

L12 ANSWER 43 OF 92 HCPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER:

2002:185331 HCPLUS

DOCUMENT NUMBER:

136:246478

TITLE:

Sequence of chrA gene from corynebacteria and use thereof in synthesis of L-lysine

INVENTOR(S) :

Bathe, Brigitte; Schischka, Natalie; Marx, Achim; Pfefferle, Walter

PATENT ASSIGNEE(S) :

Degussa A.-G., Germany

SOURCE:

PCT Int. Appl., 40 pp.

CODEN: PIXXD2

DOCUMENT TYPE:

Patent

LANGUAGE:

English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|--|----------|--------------------|----------|
| WO 2002020793 | A1 | 20020314 | WO 2001-EP9098 | 20010807 |
| WO 2002020793 | C1 | 20020613 | | |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| DE 10112098 | A1 | 20020328 | DE 2001-10112098 | 20010314 |
| US 2002155554 | A1 | 20021024 | US 2001-824524 | 20010404 |
| AU 2001093730 | A5 | 20020322 | AU 2001-93730 | 20010807 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10044756 A | 20000909 |
| | | | DE 2001-10112098 A | 20010314 |
| | | | WO 2001-EP9098 W | 20010807 |

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 44 OF 92 HCPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:185330 HCAPLUS
 DOCUMENT NUMBER: 136:246477
 TITLE: Sequence of dep33 gene from corynebacteria and use thereof in synthesis of L-lysine
 INVENTOR(S): Farwick, Mike; Huthmacher, Klaus; Pfefferle, Walter;
 Hermann, Thomas; Bathe, Brigitte
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 43 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|--|------------------|----------|
| WO 2002020792 | A1 | 20020314 | WO 2001-EP9038 | 20010804 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,
RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ,
VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| DE 10112430 | A1 | 20020321 | DE 2001-10112430 | 20010315 |
| AU 2001093723 | A5 | 20020322 | AU 2001-93723 | 20010804 |
| US 2002055115 | A1 | 20020509 | US 2001-948777 | 20010910 |
| PRIORITY APPLN. INFO.: DE 2000-10044707 A 20000909
DE 2001-10112430 A 20010315
WO 2001-EP9038 W 20010804 | | | | |
| REFERENCE COUNT: | 2 | THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT | | |

L12 ANSWER 45 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:185322 HCAPLUS
 DOCUMENT NUMBER: 136:246476
 TITLE: Sequence of hisC2 gene from corynebacteria and use thereof in synthesis of L-lysine
 INVENTOR(S): Farwick, Mike; Huthmacher, Klaus; Bathe, Brigitte;
 Pfefferle, Walter
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 36 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|------------------|----------|
| WO 2002020771 | A2 | 20020314 | WO 2001-EP9037 | 20010804 |
| WO 2002020771 | A3 | 20020516 | | |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,
RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ,
VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| DE 10108838 | A1 | 20020404 | DE 2001-10108838 | 20010223 |

| | | | | |
|------------------------|----|----------|--------------------|----------|
| AU 2001079804 | A5 | 20020322 | AU 2001-79804 | 20010804 |
| US 2002106672 | A1 | 20020808 | US 2001-948649 | 20010910 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10044709 A | 20000909 |
| | | | DE 2001-10108838 A | 20010223 |
| | | | WO 2001-EP9037 W | 20010804 |

L12 ANSWER 46 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:185169 HCAPLUS
 DOCUMENT NUMBER: 136:246475
 TITLE: Sequence of clpC gene from corynebacteria and use thereof in synthesis of L-lysine
 INVENTOR(S): Farwick, Mike; Huthmacher, Klaus; Bathe, Brigitte; Rieping, Mechthild; Pfefferle, Walter
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 49 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|--|----------|--------------------|----------|
| WO 2002020574 | A1 | 20020314 | WO 2001-EP9970 | 20010830 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL,
PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG,
UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| DE 10136987 | A1 | 20020321 | DE 2001-10136987 | 20010728 |
| AU 2001085916 | A5 | 20020322 | AU 2001-85916 | 20010830 |
| EP 1315744 | A1 | 20030604 | EP 2001-965231 | 20010830 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |
| US 2002102669 | A1 | 20020801 | US 2001-949036 | 20010910 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10044710 A | 20000909 |
| | | | DE 2001-10136987 A | 20010728 |
| | | | WO 2001-EP9970 W | 20010830 |

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 47 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:185168 HCAPLUS
 DOCUMENT NUMBER: 136:246474
 TITLE: Sequences of gpmB gene from corynebacteria and use thereof in production of L-lysine
 INVENTOR(S): Bathe, Brigitte; Schroeder, Indra; Pfefferle, Walter
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 41 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|-----------------|----------|
| WO 2002020573 | A2 | 20020314 | WO 2001-EP9453 | 20010816 |
| WO 2002020573 | A3 | 20020516 | | |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, | | | | |

CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
 GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
 LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,
 RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ,
 VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
 DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
 BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
 DE 10133668 A1 20020411 DE 2001-10133668 20010711
 AU 2001095470 A5 20020322 AU 2001-95470 20010816
 EP 1315825 A2 20030604 EP 2001-976088 20010816
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
 US 2002052486 A1 20020502 US 2001-947442 20010907
 PRIORITY APPLN. INFO.: DE 2000-10044772 A 20000909
 DE 2001-10133668 A 20010711
 WO 2001-EP9453 W 20010816

L12 ANSWER 48 OF 92 HCPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:185167 HCPLUS
 DOCUMENT NUMBER: 136:246473
 TITLE: Sequence of chrS gene from corynebacteria and use
 thereof in synthesis of L-lysine
 INVENTOR(S): Bathe, Brigitte; Schischka, Natalie; Marx, Achim;
 Pfefferle, Walter
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 39 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|---|----------|--------------------|----------|
| WO 2002020572 | A2 | 20020314 | WO 2001-EP9096 | 20010807 |
| WO 2002020572 | A3 | 20020808 | | |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,
RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ,
VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| DE 10109022 | A1 | 20020321 | DE 2001-10109022 | 20010224 |
| AU 2002013849 | A5 | 20020322 | AU 2002-13849 | 20010807 |
| EP 1315819 | A2 | 20030604 | EP 2001-982203 | 20010807 |
| R: | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | |
| US 2002055114 | A1 | 20020509 | US 2001-948774 | 20010910 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10044753 A | 20000909 |
| | | | DE 2001-10109022 A | 20010224 |
| | | | WO 2001-EP9096 W | 20010807 |

L12 ANSWER 49 OF 92 HCPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:185138 HCPLUS
 DOCUMENT NUMBER: 136:246472
 TITLE: Sequences of gap2 gene from corynebacteria and use
 thereof in production of L-lysine
 INVENTOR(S): Bathe, Brigitte; Hans, Stephan; Pfefferle, Walter
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 42 pp.

DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

CODEN: PIXXD2

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|--|----------|--------------------|----------|
| WO 2002020542 | A2 | 20020314 | WO 2001-EP9785 | 20010824 |
| WO 2002020542 | A3 | 20020530 | | |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| DE 10136985 | A1 | 20020321 | DE 2001-10136985 | 20010728 |
| AU 2001091796 | A5 | 20020322 | AU 2001-91796 | 20010824 |
| EP 1315745 | A2 | 20030604 | EP 2001-971961 | 20010824 |
| R: | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | |
| US 2002058277 | A1 | 20020516 | US 2001-948619 | 20010910 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10044754 A | 20000909 |
| | | | DE 2001-10136985 A | 20010728 |
| | | | WO 2001-EP9785 W | 20010824 |

L12 ANSWER 50 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:172101 HCAPLUS
DOCUMENT NUMBER: 136:215517
TITLE: Sequence of sigM gene from corynebacteria and use thereof in synthesis of L-lysine
INVENTOR(S): Bathe, Brigitte; Bastuck, Christine; Farwick, Mike; Hermann, Thomas; Pfefferle, Walter
PATENT ASSIGNEE(S): Degussa AG, Germany
SOURCE: PCT Int. Appl., 42 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|--|--|--------------------|----------|
| WO 2002018599 | A1 | 20020307 | WO 2001-EP9972 | 20010830 |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| DE 10136984 | A1 | 20020418 | DE 2001-10136984 | 20010728 |
| AU 2001089850 | A5 | 20020313 | AU 2001-89850 | 20010830 |
| US 2002106755 | A1 | 20020808 | US 2001-942935 | 20010831 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10043337 A | 20000902 |
| | | | DE 2001-10136984 A | 20010728 |
| | | | WO 2001-EP9972 W | 20010830 |
| REFERENCE COUNT: | 3 | THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT | | |

L12 ANSWER 51 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:172100 HCAPLUS
 DOCUMENT NUMBER: 136:231337
 TITLE: Sequence of sigH gene from corynebacteria and use thereof in synthesis of L-lysine
 INVENTOR(S): Bathe, Brigitte; Schroeder, Indra; Rieping, Mechthild; Marx, Achim; Farwick, Mike; Pfefferle, Walter; Hermann, Thomas
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: PCT Int. Appl., 45 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|--|--|--------------------|----------|
| WO 2002018598 | A1 | 20020307 | WO 2001-EP9250 | 20010810 |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| DE 10133427 | A1 | 20020314 | DE 2001-10133427 | 20010710 |
| AU 2001082084 | A5 | 20020313 | AU 2001-82084 | 20010810 |
| US 2002106756 | A1 | 20020808 | US 2001-942936 | 20010831 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10043333 A | 20000902 |
| | | | DE 2001-10133427 A | 20010710 |
| | | | WO 2001-EP9250 W | 20010810 |
| REFERENCE COUNT: | 8 | THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT | | |

L12 ANSWER 52 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:172099 HCAPLUS
 DOCUMENT NUMBER: 136:231336
 TITLE: Sequence of cstA gene from corynebacteria and use thereof in synthesis of L-lysine
 INVENTOR(S): Moeckel, Bettina; Marx, Achim; Pfefferle, Walter; Farwick, Mike; Hermann, Thomas
 PATENT ASSIGNEE(S): Degussa AG, Germany
 SOURCE: PCT Int. Appl., 53 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|--|----------|-----------------|----------|
| WO 2002018597 | A1 | 20020307 | WO 2001-EP8601 | 20010725 |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, | | | |

BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
 DE 10042051 A1 20020307 DE 2000-10042051 20000826
 AU 2001082022 A5 20020313 AU 2001-82022 20010725
 EP 1311683 A1 20030521 EP 2001-960554 20010725
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
 US 2002137912 A1 20020926 US 2001-935799 20010824
 PRIORITY APPLN. INFO.: DE 2000-10042051 A 20000826
 WO 2001-EP8601 W 20010725
 REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 53 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:172098 HCAPLUS
 DOCUMENT NUMBER: 136:215516
 TITLE: Citb gene from corynebacteria and use thereof in
 synthesis of L-lysine or valine
 INVENTOR(S): Moeckel, Bettina; Hermann, Thomas; Farwick, Mike;
 Pfefferle, Walter; Marx, Achim
 PATENT ASSIGNEE(S): Degussa AG, Germany
 SOURCE: PCT Int. Appl., 44 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|---|--------------------|----------|
| WO 2002018596 | A1 | 20020307 | WO 2001-EP8387 | 20010720 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
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GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,
RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ,
VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
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DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| DE 10108841 | A1 | 20020314 | DE 2001-10108841 | 20010223 |
| AU 2001079769 | A5 | 20020313 | AU 2001-79769 | 20010720 |
| EP 1313856 | A1 | 20030528 | EP 2001-957993 | 20010720 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |
| US 2002086372 | A1 | 20020704 | US 2001-942937 | 20010831 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10042741 A | 20000831 |
| | | | DE 2001-10108841 A | 20010223 |
| | | | WO 2001-EP8387 W | 20010720 |
| REFERENCE COUNT: | 2 | THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT | | |

L12 ANSWER 54 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:172091 HCAPLUS
 DOCUMENT NUMBER: 136:231335
 TITLE: Sequence of sigC gene from corynebacteria and use
 thereof in synthesis of L-lysine
 INVENTOR(S): Bathe, Brigitte; Hans, Stephan; Farwick, Mike;
 Hermann, Thomas; Pfefferle, Walter
 PATENT ASSIGNEE(S): Degussa AG, Germany
 SOURCE: PCT Int. Appl., 40 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|--------------------|----------|
| WO 2002018589 | A2 | 20020307 | WO 2001-EP9163 | 20010808 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,
RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ,
VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| DE 10133426 | A1 | 20020314 | DE 2001-10133426 | 20010710 |
| AU 2001093740 | A5 | 20020313 | AU 2001-93740 | 20010808 |
| EP 1320543 | A2 | 20030625 | EP 2001-974138 | 20010808 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |
| US 2002146782 | A1 | 20021010 | US 2001-941936 | 20010830 |
| PRIORITY APPLN. INFO.: | | | | |
| | | | DE 2000-10043332 A | 20000902 |
| | | | DE 2001-10133426 A | 20010710 |
| | | | WO 2001-EP9163 W | 20010808 |

L12 ANSWER 55 OF 92 HCPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:171943 HCPLUS
 DOCUMENT NUMBER: 136:231334
 TITLE: Sequence of oxyR gene from corynebacteria and use
 thereof in synthesis of L-lysine
 INVENTOR(S): Marx, Achim; Farwick, Mike; Hermann, Thomas;
 Schischka, Natalie; Bathe, Brigitte
 PATENT ASSIGNEE(S): Degussa AG, Germany
 SOURCE: PCT Int. Appl., 50 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|--------------------|----------|
| WO 2002018431 | A1 | 20020307 | WO 2001-EP8388 | 20010720 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,
RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ,
VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| DE 10110053 | A1 | 20020307 | DE 2001-10110053 | 20010302 |
| AU 2001089706 | A5 | 20020313 | AU 2001-89706 | 20010720 |
| EP 1313758 | A1 | 20030528 | EP 2001-969448 | 20010720 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |
| US 2002064839 | A1 | 20020530 | US 2001-938641 | 20010827 |
| PRIORITY APPLN. INFO.: | | | | |
| | | | DE 2000-10042052 A | 20000826 |
| | | | DE 2001-10110053 A | 20010302 |
| | | | US 2001-279415P P | 20010329 |
| | | | WO 2001-EP8388 W | 20010720 |

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 56 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:171941 HCAPLUS
 DOCUMENT NUMBER: 136:231332
 TITLE: Sequence of ccpA2 gene from corynebacteria and use thereof in synthesis of L-lysine
 INVENTOR(S): Moeckel, Bettina; Kreutzer, Caroline; Hermann, Thomas;
 Farwick, Mike; Marx, Achim; Pfefferle, Walter
 PATENT ASSIGNEE(S): Degussa AG, Germany
 SOURCE: PCT Int. Appl., 43 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|---|----------|------------------|----------|
| WO 2002018429 | A1 | 20020307 | WO 2001-EP7386 | 20010628 |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR,
HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT,
LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU,
SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU,
ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | |
| DE 10123071 | A1 | 20020307 | DE 2001-10123071 | 20010511 |
| AU 2001091658 | A5 | 20020313 | AU 2001-91658 | 20010628 |
| EP 1313759 | A1 | 20030528 | EP 2001-971740 | 20010628 |
| R: | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | |
| US 2002068336 | A1 | 20020606 | US 2001-938642 | 20010827 |
| US 6689586 | B2 | 20040210 | | |

PRIORITY APPLN. INFO.: DE 2000-10042053 A 20000826
 DE 2001-10123071 A 20010511
 WO 2001-EP7386 W 20010628

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 57 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:171940 HCAPLUS
 DOCUMENT NUMBER: 136:231331
 TITLE: Sequence of sigE gene from corynebacteria and use thereof in synthesis of L-lysine
 INVENTOR(S): Moeckel, Bettina; Hermann, Thomas; Farwick, Mike;
 Binder, Michael; Pfefferle, Walter
 PATENT ASSIGNEE(S): Degussa AG, Germany
 SOURCE: PCT Int. Appl., 45 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|---|----------|-----------------|----------|
| WO 2002018428 | A2 | 20020307 | WO 2001-EP8146 | 20010714 |
| WO 2002018428 | A3 | 20020606 | | |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,
RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, | | | |

VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
 DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
 BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
 DE 10126422 A1 20020314 DE 2001-10126422 20010531
 AU 2001085843 A5 20020313 AU 2001-85843 20010714
 EP 1320616 A2 20030625 EP 2001-965132 20010714
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
 US 2002103356 A1 20020801 US 2001-935757 20010824
 PRIORITY APPLN. INFO.: DE 2000-10043336 A 20000902
 DE 2001-10126422 A 20010531
 US 2001-295009P P 20010604
 WO 2001-EP8146 W 20010714

L12 ANSWER 58 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:171939 HCAPLUS
 DOCUMENT NUMBER: 136:231330
 TITLE: Sequence of citA gene from corynebacteria and use
 thereof in synthesis of L-lysine or valine
 INVENTOR(S): Moeckel, Bettina; Farwick, Mike; Hermann, Thomas;
 Marx, Achim; Pfefferle, Walter
 PATENT ASSIGNEE(S): Degussa AG, Germany
 SOURCE: PCT Int. Appl., 44 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|------------------|----------|
| WO 2002018427 | A2 | 20020307 | WO 2001-EP7766 | 20010706 |
| WO 2002018427 | A3 | 20020516 | | |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,
RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ,
VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | | |
| DE 10108463 | A1 | 20020314 | DE 2001-10108463 | 20010222 |
| US 2002081672 | A1 | 20020627 | US 2001-804060 | 20010313 |
| AU 2001093698 | A5 | 20020313 | AU 2001-93698 | 20010706 |
| EP 1313760 | A2 | 20030528 | EP 2001-974079 | 20010706 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |
| PRIORITY APPLN. INFO.: DE 2000-10042740 A 20000831
DE 2001-10108463 A 20010222
WO 2001-EP7766 W 20010706 | | | | |

L12 ANSWER 59 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:171931 HCAPLUS
 DOCUMENT NUMBER: 136:231329
 TITLE: Sequence of ccpA1 gene from corynebacteria and use
 thereof in synthesis of L-lysine
 INVENTOR(S): Moeckel, Bettina; Kreutzer, Caroline
 PATENT ASSIGNEE(S): Degussa AG, Germany
 SOURCE: PCT Int. Appl., 38 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|--|----------|--------------------|----------|
| WO 2002018419 | A2 | 20020307 | WO 2001-EP8356 | 20010719 |
| WO 2002018419 | A3 | 20021031 | | |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| DE 10110052 | A1 | 20020307 | DE 2001-10110052 | 20010302 |
| AU 2002012114 | A5 | 20020313 | AU 2002-12114 | 20010719 |
| EP 1311685 | A2 | 20030521 | EP 2001-980214 | 20010719 |
| R: | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | |
| US 2002151001 | A1 | 20021017 | US 2001-938540 | 20010827 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10042054 A | 20000826 |
| | | | DE 2001-10110052 A | 20010302 |
| | | | US 2001-279413P P | 20010329 |
| | | | WO 2001-EP8356 W | 20010719 |

L12 ANSWER 60 OF 92 HCPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:123218 HCPLUS

DOCUMENT NUMBER: 136:182548

TITLE: Sequences of *Corynebacterium*

glutamicum gene lysR2 encoding transcription regulator and its use in increasing yields of L-lysine and L-valine in fermentation

INVENTOR(S): Moeckel, Bettina; Farwick, Mike; Hermann, Thomas; Kreutzer, Caroline; Pfefferle, Walter

PATENT ASSIGNEE(S): Degussa A.-G., Germany

SOURCE: PCT Int. Appl., 44 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|--|----------|--------------------|----------|
| WO 2002012504 | A1 | 20020214 | WO 2001-EP6808 | 20010615 |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | |
| DE 10110346 | A1 | 20020221 | DE 2001-10110346 | 20010303 |
| AU 2001079663 | A5 | 20020218 | AU 2001-79663 | 20010615 |
| EP 1307563 | A1 | 20030507 | EP 2001-957853 | 20010615 |
| R: | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | |
| US 2002081674 | A1 | 20020627 | US 2001-826909 | 20010724 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10039047 A | 20000810 |
| | | | DE 2001-10110346 A | 20010303 |

WO 2001-EP6808 W 20010615

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 61 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:123057 HCAPLUS
DOCUMENT NUMBER: 136:182547
TITLE: Sequences of *Corynebacterium glutamicum* gene lysR1 encoding transcription regulator and its use in increasing yields of L-lysine in fermentation
INVENTOR(S): Moeckel, Bettina; Farwick, Mike; Hermann, Thomas; Kreutzer, Caroline; Pfefferle, Walter
PATENT ASSIGNEE(S): Degussa A.-G., Germany
SOURCE: PCT Int. Appl., 38 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|--|----------|------------------|----------|
| WO 2002012295 | A1 | 20020214 | WO 2001-EP8258 | 20010718 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| DE 10039044 | A1 | 20020221 | DE 2000-10039044 | 20000810 |
| US 2003170780 | A1 | 20030911 | US 2001-903770 | 20010713 |
| AU 2001089674 | A5 | 20020218 | AU 2001-89674 | 20010718 |
| EP 1309619 | A1 | 20030514 | EP 2001-969409 | 20010718 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |

PRIORITY APPLN. INFO.: DE 2000-10039044 A 20000810
WO 2001-EP8258 W 20010718
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 62 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:123053 HCAPLUS
DOCUMENT NUMBER: 136:182546
TITLE: Sequences of *Corynebacterium glutamicum* gene luxR encoding transcription regulator and its use in increasing yields of L-lysine in fermentation
INVENTOR(S): Moeckel, Bettina; Kreutzer, Caroline; Bathe, Brigitte
PATENT ASSIGNEE(S): Degussa A.-G., Germany
SOURCE: PCT Int. Appl., 32 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|----------|
| WO 2002012291 | A2 | 20020214 | WO 2001-EP8256 | 20010718 |
| WO 2002012291 | A3 | 20020627 | | |

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
 CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
 GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
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 RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ,
 VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
 DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
 BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
 DE 10039043 A1 20020221 DE 2000-10039043 20000810
 US 2002086404 A1 20020704 US 2001-903771 20010713
 AU 2002010420 A5 20020218 AU 2002-10420 20010718
 EP 1307478 A2 20030507 EP 2001-978249 20010718
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
 PRIORITY APPLN. INFO.: DE 2000-10039043 A 20000810
 WO 2001-EP8256 W 20010718

L12 ANSWER 63 OF 92 HCPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:276480 HCPLUS
 DOCUMENT NUMBER: 136:308623
 TITLE: Sequences of fadD15 gene from corynebacteria and use
 thereof in production of L-lysine
 INVENTOR(S): Nampoothiri, K. Madhavan; Mockel, Bettina; Pfefferle,
 Walter; Eggeling, Lothar; Sahm, Hermann
 PATENT ASSIGNEE(S): USA
 SOURCE: U.S. Pat. Appl. Publ., 17 pp., Cont.-in-part of U.S.
 Ser. No. 577,848, abandoned.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|--------------------|-------------|
| US 2002042107 | A1 | 20020411 | US 2001-855750 | 20010516 |
| DE 10021831 | A1 | 20011108 | DE 2000-10021831 | 20000504 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10021831 A | 20000504 |
| | | | US 2000-577848 | B2 20000525 |

L12 ANSWER 64 OF 92 HCPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:693203 HCPLUS
 DOCUMENT NUMBER: 137:231478
 TITLE: Mutations in the rpoB gene of a lysine-producing
Corynebacterium glutamicum affecting
 yields of lysine
 INVENTOR(S): Moeckel, Bettina; Bathe, Brigitte; Hermann, Thomas;
 Pfefferle, Walter; Binder, Michael
 PATENT ASSIGNEE(S): Degussa AG, Germany
 SOURCE: Eur. Pat. Appl., 49 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 3
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|------------------|----------|
| EP 1239040 | A2 | 20020911 | EP 2002-2501 | 20020202 |
| EP 1239040 | A3 | 20030108 | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |
| DE 10162387 | A1 | 20021017 | DE 2001-10162387 | 20011219 |

PRIORITY APPLN. INFO.:

DE 2001-10107229 A 20010216
DE 2001-10162387 A 20011219

L12 ANSWER 65 OF 92 HCPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:183815 HCPLUS
DOCUMENT NUMBER: 136:246469
TITLE: Nucleotide sequence of the llld2 gene of Corynebacterium coding for lactate dehydrogenase for use in increasing yields in amino acid fermentation
INVENTOR(S): Farwick, Mike; Huthmacher, Klaus; Bathe, Brigitte; Pfefferle, Walter
PATENT ASSIGNEE(S): Degussa AG, Germany
SOURCE: Eur. Pat. Appl., 18 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|------------------|----------|
| EP 1186657 | A1 | 20020313 | EP 2001-117811 | 20010721 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO | | | | |
| DE 10044681 | A1 | 20020321 | DE 2000-10044681 | 20000909 |
| WO 2002059329 | A1 | 20020801 | WO 2001-EP797 | 20010125 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR,
HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT,
LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU,
SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU,
ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | | |
| EP 1354051 | A1 | 20031022 | EP 2001-919248 | 20010125 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |
| US 2002055152 | A1 | 20020509 | US 2001-946142 | 20010905 |
| DE 2000-10044681 A 20000909
WO 2001-EP797 W 20010125 | | | | |

L12 ANSWER 66 OF 92 HCPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:214906 HCPLUS
DOCUMENT NUMBER: 136:242992
TITLE: Sequences of *Corynebacterium glutamicum* genes of cysteine biosynthesis the development of strains for amino acid fermentation
INVENTOR(S): Farwick, Mike; Huthmacher, Klaus; Pfefferle, Walter; Schischka, Natalie; Bathe, Brigitte
PATENT ASSIGNEE(S): Degussa A.-G., Germany
SOURCE: Ger. Offen., 36 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|--|----------|
| DE 10136986 | A1 | 20020321 | DE 2001-10136986 | 20010728 |
| WO 2002029029 | A2 | 20020411 | WO 2001-EP9723 | 20010823 |
| WO 2002029029 | A3 | 20020613 | W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, | |

CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
 GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
 LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL,
 PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG,
 UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
 DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
 BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
 AU 2002010456 A5 20020415 AU 2002-10456 20010823
 EP 1320593 A2 20030625 EP 2001-978296 20010823
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
 US 2002086373 A1 20020704 US 2001-962357 20010926
 PRIORITY APPLN. INFO.: DE 2000-10048603 A1 20000903
 DE 2001-10109691 A1 20010228
 US 2001-294223P P 20010531
 DE 2001-10136986 A 20010728
 WO 2001-EP9723 W 20010823

L12 ANSWER 67 OF 92 HCPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:391316 HCPLUS
 DOCUMENT NUMBER: 136:382849
 TITLE: The mtrA and mtrB genes of Corynebacterium encoding two-component signal transduction pathway for use in engineering lysine biosynthesis
 PATENT ASSIGNEE(S): Degussa AG, Germany; Forschungszentrum Juelich GmbH
 SOURCE: Ger. Offen., 22 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|---|----------|------------------|-------------|
| DE 10125089 | A1 | 20020523 | DE 2001-10125089 | 20010523 |
| WO 2002042472 | A1 | 20020530 | WO 2001-EP12220 | 20011023 |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL,
PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG,
UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| AU 2002023637 | A5 | 20020603 | AU 2002-23637 | 20011023 |
| EP 1337649 | A1 | 20030827 | EP 2001-997557 | 20011023 |
| R: | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | |
| US 2002137073 | A1 | 20020926 | US 2001-990337 | 20011123 |
| US 6703223 | B2 | 20040309 | | |
| US 2003157551 | A1 | 20030821 | US 2003-411318 | 20030411 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10057802 | A1 20001122 |
| | | | DE 2001-10125089 | A 20010523 |
| | | | WO 2001-EP12220 | W 20011023 |
| | | | US 2001-990337 | A3 20011123 |

L12 ANSWER 68 OF 92 HCPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:791974 HCPLUS
 DOCUMENT NUMBER: 137:309601
 TITLE: Mutations in the mqo gene of a amino acid-producing Corynebacterium glutamicum affecting yields

INVENTOR(S) : Farwick, Mike; Bathe, Brigitte; Hermann, Thomas; Marx,
 Achim; Pfefferle, Walter
 PATENT ASSIGNEE(S) : Degussa AG, Germany
 SOURCE: Ger. Offen., 12 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|---|----------|--------------------|----------|
| DE 10117816 | A1 | 20021017 | DE 2001-10117816 | 20010410 |
| WO 2002086137 | A2 | 20021031 | WO 2002-EP3728 | 20020404 |
| WO 2002086137 | A3 | 20030828 | | |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,
PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ,
UA, UG, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH,
CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR,
BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| EP 1377674 | A2 | 20040107 | EP 2002-745213 | 20020404 |
| R: | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | |
| US 2003044943 | A1 | 20030306 | US 2002-118325 | 20020409 |
| PRIORITY APPLN. INFO.: | | | DE 2001-10117816 A | 20010410 |
| | | | US 2002-352212P P | 20020129 |
| | | | WO 2002-EP3728 W | 20020404 |

L12 ANSWER 69 OF 92 HCPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:714065 HCPLUS
 DOCUMENT NUMBER: 137:213536
 TITLE: The fda gene of Corynebacterium encoding a fructose
 bisphosphate aldolase for use in engineering lysine
 biosynthesis
 INVENTOR(S) : Farwick, Mike; Bathe, Brigitte; Hermann, Thomas; Marx,
 Achim
 PATENT ASSIGNEE(S) : Degussa AG, Germany
 SOURCE: Ger. Offen., 6 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|---|----------|--------------------|----------|
| DE 10113011 | A1 | 20020919 | DE 2001-10113011 | 20010317 |
| WO 2002074966 | A2 | 20020926 | WO 2002-EP2568 | 20020308 |
| WO 2002074966 | A3 | 20030320 | | |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,
PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ,
UA, UG, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH,
CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR,
BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| PRIORITY APPLN. INFO.: | | | DE 2001-10113011 A | 20010317 |

L12 ANSWER 70 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:573259 HCAPLUS
 DOCUMENT NUMBER: 137:137499
 TITLE: The *otsA* gene of *Corynebacterium glutamicum* encoding a trehalose-6-phosphate synthase and its use in increasing yields of lysine in fermentation
 INVENTOR(S): Hermann, Thomas; Wolf, Andreas; Morbach, Susanne; Kraemer, Reinhard
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: Ger. Offen., 20 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|------------------|----------|
| DE 10110760 | A1 | 20020801 | DE 2001-10110760 | 20010307 |
| WO 2002061093 | A1 | 20020808 | WO 2001-EP12221 | 20011023 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL,
PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG,
UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| EP 1358337 | A1 | 20031105 | EP 2001-978450 | 20011023 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |
| US 2002192674 | A1 | 20021219 | US 2002-58945 | 20020130 |
| PRIORITY APPLN. INFO.: DE 2001-10103873 IA 20010130
DE 2001-10110760 A 20010307
WO 2001-EP12221 W 20011023 | | | | |

L12 ANSWER 71 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:391291 HCAPLUS
 DOCUMENT NUMBER: 136:382848
 TITLE: The *cysQ* gene of *Corynebacterium* encoding a transport protein for use in engineering lysine biosynthesis
 INVENTOR(S): Farwick, Mike; Huthmacher, Klaus; Bathe, Brigitte;
Pfefferle, Walter
 PATENT ASSIGNEE(S): Degussa AG, Germany
 SOURCE: Ger. Offen., 12 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|------------------|----------|
| DE 10057801 | A1 | 20020523 | DE 2000-10057801 | 20001122 |
| WO 2002042466 | A2 | 20020530 | WO 2001-EP12294 | 20011024 |
| WO 2002042466 | A3 | 20030313 | | |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL,
PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG,
UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
 DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
 BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
 AU 2002024789 A5 20020603 AU 2002-24789 20011024
 EP 1335980 A2 20030820 EP 2001-994615 20011024
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
 US 2002115162 A1 20020822 US 2001-987446 20011114
 PRIORITY APPLN. INFO.: DE 2000-10057801 A 20001122
 WO 2001-EP12294 W 20011024

L12 ANSWER 72 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:122520 HCAPLUS
 DOCUMENT NUMBER: 136:166155
 TITLE: The rpi gene of *Corynebacterium glutamicum* and its use in increasing yields of lysine in fermentation
 INVENTOR(S): Schischka, Natalie; Moeckel, Bettina; Pfefferle, Walter
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: Ger. Offen., 10 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|------------------|----------|
| DE 10037612 | A1 | 20020214 | DE 2000-10037612 | 20000802 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10037612 | 20000802 |

L12 ANSWER 73 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:122519 HCAPLUS
 DOCUMENT NUMBER: 136:166154
 TITLE: The rpe gene of *Corynebacterium glutamicum* and its use in increasing yields of lysine in fermentation
 INVENTOR(S): Bastuck, Christine; Moeckel, Bettina; Pfefferle, Walter
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: Ger. Offen., 10 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|------------------|----------|
| DE 10037611 | A1 | 20020214 | DE 2000-10037611 | 20000802 |
| PRIORITY APPLN. INFO.: | | | DE 2000-10037611 | 20000802 |

L12 ANSWER 74 OF 92 EMBASE COPYRIGHT 2004 ELSEVIER INC. ALL RIGHTS RESERVED.
 on STN DUPLICATE 7
 ACCESSION NUMBER: 2002395685 EMBASE
 TITLE: Effect of pyruvate carboxylase overexpression on the physiology of *Corynebacterium glutamicum*.
 AUTHOR: Kofas M.A.G.; Jung G.Y.; Aon J.C.; Stephanopoulos G.
 CORPORATE SOURCE: G. Stephanopoulos, Department of Chemical Engineering, MIT, Cambridge, MA 02139, United States. gregstep@mit.edu
 SOURCE: Applied and Environmental Microbiology, (1 Nov 2002) 68/11 (5422-5428).

Refs: 44
ISSN: 0099-2240 CODEN: AEMIDF
COUNTRY: United States
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 004 Microbiology
LANGUAGE: English
SUMMARY LANGUAGE: English

L12 ANSWER 75 OF 92 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
ACCESSION NUMBER: 2001-06681 BIOTECHDS
TITLE: Coryneform bacteria for high level production of lysine,
useful as feed additive, overexpresses the pyc and at least
one other gene, e.g. dapA, dapB or lysE;
for use as feed-additive
AUTHOR: Kreutzer C; Moeckel B; Pfefferle W; Eggeling L; Sahm H; Patek
M
PATENT ASSIGNEE: Degussa; Res.Cent.Juelich
LOCATION: Frankfurt, Germany; Juelich, Germany.
PATENT INFO: EP 1067193 10 Jan 2001
APPLICATION INFO: EP 2000-114502 6 Jul 2000
PRIORITY INFO: DE 1999-1031314 7 Jul 1999
DOCUMENT TYPE: Patent
LANGUAGE: German
OTHER SOURCE: WPI: 2001-140055 [15]

L12 ANSWER 76 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:904501 HCAPLUS
DOCUMENT NUMBER: 136:36482
TITLE: The glbO gene of **Corynebacterium glutamicum** encoding Hb-like protein and its
use in increasing yields of lysine in fermentation
INVENTOR(S): Moeckel, Bettina; Marx, Achim; Pfefferle, Walter
PATENT ASSIGNEE(S): Degussa AG, Germany
SOURCE: PCT Int. Appl., 35 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|---|----------|-----------------|------------|
| WO 2001094569 | A2 | 20011213 | WO 2001-EP4792 | 20010427 |
| WO 2001094569 | A3 | 20020321 | | |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR,
HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT,
LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU,
SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU,
ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |
| RW: | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | |
| US 2002081673 | A1 | 20020627 | US 2001-813932 | 20010322 |
| EP 1287143 | A2 | 20030305 | EP 2001-940376 | 20010427 |
| R: | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | |
| PRIORITY APPLN. INFO.: | | | US 2000-585642 | A 20000602 |
| | | | US 2001-813932 | A 20010322 |
| | | | WO 2001-EP4792 | W 20010427 |

L12 ANSWER 77 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:747222 HCAPLUS
DOCUMENT NUMBER: 135:287596

TITLE: The rplK gene of *Corynebacterium glutamicum* and its use in increasing yields of lysine in fermentation
 INVENTOR(S): Wehmeier, Lutz; Tauch, Andreas; Puehler, Alfred; Kalinowski, Joern; Moeckel, Bettina
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: Eur. Pat. Appl., 21 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|------------------|----------|
| EP 1143003 | A2 | 20011010 | EP 2001-105928 | 20010309 |
| EP 1143003 | A3 | 20011114 | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO | | | | |
| DE 10017057 | A1 | 20011011 | DE 2000-10017057 | 20000405 |
| CA 2340300 | AA | 20011005 | CA 2001-2340300 | 20010402 |
| ZA 2001002776 | A | 20011005 | ZA 2001-2776 | 20010404 |
| CN 1316516 | A | 20011010 | CN 2001-112451 | 20010404 |
| BR 2001001319 | A | 20011106 | BR 2001-1319 | 20010405 |
| JP 2002051789 | A2 | 20020219 | JP 2001-107048 | 20010405 |
| US 2003148476 | A1 | 20030807 | US 2002-302931 | 20021125 |
| PRIORITY APPLN. INFO.: DE 2000-10017057 A 20000405
US 2000-568023 A 20000510 | | | | |

L12 ANSWER 78 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2001:432943 HCAPLUS
 DOCUMENT NUMBER: 135:45274
 TITLE: The zwa2 gene of *Corynebacterium glutamicum* and its use in increasing yields of lysine in fermentation
 INVENTOR(S): Mockel, Bettina; Weissenborn, Anke; Pfefferle, Walter; Marx, Achim; Puhler, Alfred; Kalinowski, Jorn; Bathe, Brigitte; Dusch, Nicole
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: Eur. Pat. Appl., 20 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|--|------------------|----------|
| EP 1106693 | A1 | 20010613 | EP 2000-125832 | 20001125 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO | | | | |
| DE 19959327 | A1 | 20010613 | DE 1999-19959327 | 19991209 |
| US 2002106748 | A1 | 20020808 | US 2000-733386 | 20001204 |
| JP 2001197892 | A2 | 20010724 | JP 2000-371850 | 20001206 |
| ZA 2000007270 | A | 20010607 | ZA 2000-7270 | 20001207 |
| CN 1312373 | A | 20010912 | CN 2000-136074 | 20001208 |
| BR 2000005811 | A | 20020723 | BR 2000-5811 | 20001208 |
| PRIORITY APPLN. INFO.: DE 1999-19959327 A 19991209 | | | | |
| REFERENCE COUNT: | 2 | THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT | | |

L12 ANSWER 79 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2001:416528 HCAPLUS
 DOCUMENT NUMBER: 135:18610

TITLE: The *csp1* gene of *Corynebacterium glutamicum* and its use in increasing yields of lysine in fermentation
 INVENTOR(S): Mockel, Bettina; Pfefferle, Walter; Brand, Sven;
 Puhler, Alfred; Kalinowski, Jorn; Bathe, Brigitte
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: Eur. Pat. Appl., 10 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|--|-----------------|----------|
| EP 1104810 | A1 | 20010606 | EP 2000-122575 | 20001017 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO | | | | |
| CN 1295131 | A | 20010516 | CN 2000-130374 | 20001102 |
| JP 2001178481 | A2 | 20010703 | JP 2000-339316 | 20001107 |
| ZA 2000006442 | A | 20010528 | ZA 2000-6442 | 20001108 |
| BR 2000005307 | A | 20010612 | BR 2000-5307 | 20001108 |
| US 2003087400 | A1 | 20030508 | US 2002-178219 | 20020625 |
| DE 1999-19953809 A 19991109 | | | | |
| US 2000-707913 A3 20001108 | | | | |
| PRIORITY APPLN. INFO.: | | | | |
| REFERENCE COUNT: | 3 | THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT | | |

L12 ANSWER 80 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2001:396523 HCAPLUS
 DOCUMENT NUMBER: 135:2880
 TITLE: The *pfk* gene of *Corynebacterium glutamicum* and its use in increasing yields of lysine in fermentation
 INVENTOR(S): Mockel, Bettina; Pfefferle, Walter
 PATENT ASSIGNEE(S): Degussa A.-G., Germany
 SOURCE: Eur. Pat. Appl., 19 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|--|------------------|----------|
| EP 1103613 | A1 | 20010530 | EP 2000-125528 | 20001122 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO | | | | |
| DE 19956131 | A1 | 20010531 | DE 1999-19956131 | 19991123 |
| JP 2001186895 | A2 | 20010710 | JP 2000-354308 | 20001121 |
| ZA 2000006856 | A | 20010712 | ZA 2000-6856 | 20001122 |
| CN 1297055 | A | 20010530 | CN 2000-132502 | 20001123 |
| BR 2000005543 | A | 20010807 | BR 2000-5543 | 20001123 |
| DE 1999-19956131 A 19991123 | | | | |
| PRIORITY APPLN. INFO.: | | | | |
| REFERENCE COUNT: | 4 | THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT | | |

L12 ANSWER 81 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2001:396522 HCAPLUS
 DOCUMENT NUMBER: 135:2879
 TITLE: The *sucC* and *sucD* genes of *Corynebacterium glutamicum* and their use in increasing yields of lysine in fermentation
 INVENTOR(S): Mockel, Bettina; Pfefferle, Walter; Marx, Achim

PATENT ASSIGNEE(S) : Degussa A.-G., Germany
 SOURCE: Eur. Pat. Appl., 26 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|-----------------|----------|
| EP 1103611 | A1 | 20010530 | EP 2000-125527 | 20001122 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO | | | | |

| | | | | |
|---------------|----|----------|------------------|----------|
| DE 19956686 | A1 | 20010531 | DE 1999-19956686 | 19991125 |
| ZA 2000006884 | A | 20010525 | ZA 2000-6884 | 20001123 |
| CN 1298019 | A | 20010606 | CN 2000-132540 | 20001124 |
| JP 2001190290 | A2 | 20010717 | JP 2000-358256 | 20001124 |
| BR 2000005608 | A | 20010717 | BR 2000-5608 | 20001127 |

PRIORITY APPLN. INFO.:
 REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 82 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:431773 HCAPLUS
 DOCUMENT NUMBER: 135:45273
 TITLE: The zwl gene of **Corynebacterium glutamicum** and its use in increasing yields of lysine in fermentation
 INVENTOR(S): Moeckel, Bettina; Pfefferle, Walter; Marx, Achim;
 Kalinowski, Joern; Bathe, Brigitte; Puehler, Alfred
 PATENT ASSIGNEE(S): Degussa-Huels A.-G., Germany
 SOURCE: Ger. Offen., 14 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|------------------|----------|
| DE 19959328 | A1 | 20010613 | DE 1999-19959328 | 19991209 |
| EP 1111062 | A1 | 20010627 | EP 2000-124042 | 20001104 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO | | | | |
| JP 2001197893 | A2 | 20010724 | JP 2000-371852 | 20001206 |
| ZA 2000007269 | A | 20010607 | ZA 2000-7269 | 20001207 |
| CN 1304998 | A | 20010725 | CN 2000-134034 | 20001207 |
| BR 2000005804 | A | 20011120 | BR 2000-5804 | 20001208 |
| US 2002127663 | A1 | 20020912 | US 2000-731909 | 20001208 |
| US 6632644 | B2 | 20031014 | | |

PRIORITY APPLN. INFO.: DE 1999-19959328 A 19991209

L12 ANSWER 83 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:393183 HCAPLUS
 DOCUMENT NUMBER: 135:16690
 TITLE: The pfkA gene of **Corynebacterium glutamicum** and its use in increasing yields of lysine in fermentation
 INVENTOR(S): Moeckel, Bettina; Pfefferle, Walter
 PATENT ASSIGNEE(S): Degussa-Huels A.-G., Germany
 SOURCE: Ger. Offen., 12 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|------------------|----------|
| DE 10011922 | A1 | 20010531 | DE 2000-10011922 | 20000311 |
| EP 1106622 | A2 | 20010613 | EP 2000-122746 | 20001019 |
| EP 1106622 | A3 | 20040102 | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO | | | | |
| CN 1297054 | A | 20010530 | CN 2000-132480 | 20001121 |
| JP 2001186896 | A2 | 20010710 | JP 2000-354681 | 20001121 |
| ZA 2000006849 | A | 20010605 | ZA 2000-6849 | 20001122 |
| BR 2000005531 | A | 20010807 | BR 2000-5531 | 20001123 |
| DE 1999-19956133 A1 19991123 | | | | |
| DE 2000-10011922 A 20000311 | | | | |

PRIORITY APPLN. INFO.:

L12 ANSWER 84 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:523505 HCAPLUS
DOCUMENT NUMBER: 135:121253
TITLE: The ptsH gene of *Corynebacterium glutamicum* and its use in increasing yields of lysine in fermentation
INVENTOR(S): Farwick, Mike; Moeckel, Bettina; Pfefferle, Walter
PATENT ASSIGNEE(S): Degussa A.-G., Germany
SOURCE: Ger. Offen., 10 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|------------------|----------|
| DE 10001101 | A1 | 20010719 | DE 2000-10001101 | 20000113 |
| AU 2000072548 | A5 | 20010726 | AU 2000-72548 | 20001228 |
| US 2002094554 | A1 | 20020718 | US 2001-755187 | 20010108 |
| US 2004005675 | A9 | 20040108 | | |
| ZA 2001000332 | A | 20010726 | ZA 2001-332 | 20010111 |
| EP 1118666 | A1 | 20010725 | EP 2001-100695 | 20010112 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO | | | | |
| JP 2001224390 | A2 | 20010821 | JP 2001-5671 | 20010112 |
| CN 1319667 | A | 20011031 | CN 2001-100614 | 20010112 |
| BR 2001000063 | A | 20020305 | BR 2001-63 | 20010112 |
| US 2002090700 | A1 | 20020711 | US 2001-819930 | 20010329 |
| US 2003224499 | A9 | 20031204 | | |
| DE 2000-10001101 A 20000113 | | | | |
| US 2000-503189 B2 20000214 | | | | |
| US 2001-755187 A2 20010108 | | | | |

L12 ANSWER 85 OF 92 MEDLINE on STN

DUPPLICATE 8

ACCESSION NUMBER: 2001483537 MEDLINE

DOCUMENT NUMBER: PubMed ID: 11321586

TITLE: Pyruvate carboxylase is a major bottleneck for glutamate and lysine production by *Corynebacterium glutamicum*.

AUTHOR: Peters-Wendisch P G; Schiel B; Wendisch V F; Katsoulidis E; Mockel B; Sahm H; Eikmanns B J

CORPORATE SOURCE: Dept Microbiology and Biotechnology, University of Ulm, Germany.

SOURCE: Journal of molecular microbiology and biotechnology, (2001 Apr) 3 (2) 295-300.

PUB. COUNTRY: Journal code: 100892561. ISSN: 1464-1801.
England: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: GENBANK-Y09548
ENTRY MONTH: 200108
ENTRY DATE: Entered STN: 20010903
Last Updated on STN: 20010903
Entered Medline: 20010830

L12 ANSWER 86 OF 92 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2000:457217 HCAPLUS
DOCUMENT NUMBER: 133:86093
TITLE: Pyruvate carboxylase from
Corynebacterium glutamicum,
recombinant expression and
lysine production
INVENTOR(S): Sinskey, Anthony J.; Lessard, Philip A.; Willis, Laura
B.
PATENT ASSIGNEE(S): USA
SOURCE: PCT Int. Appl., 51 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|---|----------|-----------------|----------|
| WO 2000039305 | A1 | 20000706 | WO 1998-US27301 | 19981223 |
| W: | AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE,
DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP,
KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN,
MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM,
TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU,
TJ, TM | | | |
| RW: | GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES,
FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI,
CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | |
| CA 2356446 | AA | 20000706 | CA 1998-2356446 | 19981223 |
| BR 9816106 | A | 20010911 | BR 1998-16106 | 19981223 |
| EP 1147198 | A1 | 20011024 | EP 1998-966046 | 19981223 |
| R: | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, FI | | | |

PRIORITY APPLN. INFO.: WO 1998-US27301 A 19981223
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 87 OF 92 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 2000:525904 SCISEARCH
THE GENUINE ARTICLE: 332DE
TITLE: Cloning of the malic enzyme gene from
Corynebacterium glutamicum and role of
the enzyme in lactate metabolism
AUTHOR: Gourdon P; Baucher M F; Lindley N D (Reprint); Guyonvarch
A
CORPORATE SOURCE: CNRS, UMR 5504, INSA, CTR BIOINGN GILBERT DURAND, LAB
BIOTECHNOL BIOPROCEDES, 135 AVE RANGUEIL, F-31077 TOULOUSE
4, FRANCE (Reprint); CNRS, UMR 5504, INSA, CTR BIOINGN
GILBERT DURAND, LAB BIOTECHNOL BIOPROCEDES, F-31077
TOULOUSE 4, FRANCE; INST NATL SCI APPL, CTR BIOINGN
GILBERT DURAND, UMR 792, F-31077 TOULOUSE, FRANCE; UNIV
PARIS 11, CTR UNIV ORSAY, CNRS, UMR 8621, INST GENET &

COUNTRY OF AUTHOR: MICROBIOL, F-91405 ORSAY, FRANCE
FRANCE
SOURCE: APPLIED AND ENVIRONMENTAL MICROBIOLOGY, (JUL 2000) Vol.
66, No. 7, pp. 2981-2987.
Publisher: AMER SOC MICROBIOLOGY, 1752 N ST NW,
WASHINGTON, DC 20036-2904.
ISSN: 0099-2240.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE; AGRI
LANGUAGE: English
REFERENCE COUNT: 52
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

L12 ANSWER 88 OF 92 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 1998:321316 SCISEARCH
THE GENUINE ARTICLE: ZJ169
TITLE: Pyruvate carboxylase from
Corynebacterium glutamicum:
characterization, expression and inactivation of
the pyc gene
AUTHOR: PetersWendisch P G (Reprint); Kreutzer C; Kalinowski J;
Patek M; Sahm H; Eikmanns B J
CORPORATE SOURCE: UNIV CALIF BERKELEY, DEPT PLANT & MICROBIAL BIOL,
BERKELEY, CA 94705 (Reprint); FORSCHUNGSZENTRUM JULICH,
INST BIOTECHNOL, D-52425 JULICH, GERMANY; UNIV BIELEFELD,
LEHRSTUHL GENET, D-33501 BIELEFELD, GERMANY; ACAD SCI
CZECH REPUBL, INST MICROBIOL, CZ-14220 PRAGUE, CZECH
REPUBLIC
COUNTRY OF AUTHOR: USA; GERMANY; CZECH REPUBLIC
SOURCE: MICROBIOLOGY-UK, (APR 1998) Vol. 144, Part 4, pp. 915-927.
Publisher: SOC GENERAL MICROBIOLOGY, MARLBOROUGH HOUSE,
BASINGSTOKE RD, SPENCERS WOODS, READING, BERKS, ENGLAND
RG7 1AE.
ISSN: 1350-0872.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 67
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

L12 ANSWER 89 OF 92 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 1998:798850 SCISEARCH
THE GENUINE ARTICLE: 127ZW
TITLE: Sequence of the *Corynebacterium*
glutamicum pyruvate carboxylase
gene
AUTHOR: Koffas M A G; Ramamoorthi R; Pine W A; Sinskey A J;
Stephanopoulos G (Reprint)
CORPORATE SOURCE: MIT, DEPT CHEM ENGN, CAMBRIDGE, MA 02139 (Reprint); MIT,
DEPT CHEM ENGN, CAMBRIDGE, MA 02139
COUNTRY OF AUTHOR: USA
SOURCE: APPLIED MICROBIOLOGY AND BIOTECHNOLOGY, (SEP 1998) Vol.
50, No. 3, pp. 346-352.
Publisher: SPRINGER VERLAG, 175 FIFTH AVE, NEW YORK, NY
10010.
ISSN: 0175-7598.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE; AGRI
LANGUAGE: English
REFERENCE COUNT: 33
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

L12 ANSWER 90 OF 92 EMBASE COPYRIGHT 2004 ELSEVIER INC. ALL RIGHTS RESERVED.
on STN DUPLICATE 9

ACCESSION NUMBER: 97147233 EMBASE
DOCUMENT NUMBER: 1997147233
TITLE: **Pyruvate carboxylase as an anaplerotic enzyme in *Corynebacterium glutamicum*.**
AUTHOR: Peters-Wendisch P.G.; Wendisch V.F.; Paul S.; Eikmanns B.J.; Sahm H.
CORPORATE SOURCE: B.J. Eikmanns, Institut fur Biotechnologie, Forschungszentrum Julich, D-52425 Julich, Germany.
b.eikmanns@kfa-juelich.de
SOURCE: Microbiology, (1997) 143/4 (1095-1103).
Refs: 46
ISSN: 1350-0872 CODEN: MROBEO
COUNTRY: United Kingdom
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 004 Microbiology
029 Clinical Biochemistry
LANGUAGE: English
SUMMARY LANGUAGE: English

L12 ANSWER 91 OF 92 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 96:540057 SCISEARCH
THE GENUINE ARTICLE: UX143
TITLE: C-3-CARBOXYLATION AS AN ANAPLEROTIC REACTION IN PHOSPHOENOLPYRUVATE CARBOXYLASE-DEFICIENT **CORYNEBACTERIUM-GLUTAMICUM**
AUTHOR: PETERSWENDISCH P G; WENDISCH V F; DEGRAAF A A; EIKMANNS B J (Reprint); SAHM H
CORPORATE SOURCE: KFA JULICH GMBH, FORSCHUNGSZENTRUM, INST BIOTECHNOL 1, D-52425 JULICH, GERMANY (Reprint); KFA JULICH GMBH, FORSCHUNGSZENTRUM, INST BIOTECHNOL 1, D-52425 JULICH, GERMANY
COUNTRY OF AUTHOR: GERMANY
SOURCE: ARCHIVES OF MICROBIOLOGY, (JUN 1996) Vol. 165, No. 6, pp. 387-396.
ISSN: 0302-8933.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 46
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

L12 ANSWER 92 OF 92 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 94:177461 SCISEARCH
THE GENUINE ARTICLE: MZ715
TITLE: EFFECTS OF PHOSPHOENOL PYRUVATE-CARBOXYLASE DEFICIENCY ON METABOLISM AND LYSINE PRODUCTION IN **CORYNEBACTERIUM-GLUTAMICUM**
AUTHOR: GUBLER M (Reprint); PARK S M; JETTEN M; STEPHANOPOULOS G; SINSKEY A J
CORPORATE SOURCE: HOFFMANN LA ROCHE AG, CH-4002 BASEL, SWITZERLAND (Reprint); MIT, DEPT BIOL, CAMBRIDGE, MA, 02139; MIT, DEPT CHEM ENGN, CAMBRIDGE, MA, 02139
COUNTRY OF AUTHOR: SWITZERLAND; USA
SOURCE: APPLIED MICROBIOLOGY AND BIOTECHNOLOGY, (FEB 1994) Vol. 40, No. 6, pp. 857-863.
ISSN: 0175-7598.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE; AGRI
LANGUAGE: ENGLISH
REFERENCE COUNT: 33
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

=> e sinskey a j/au

E1 1 SINSKE S A/AU
E2 18 SINSKEY A/AU
E3 905 --> SINSKEY A J/AU
E4 1 SINSKEY A J */AU
E5 2 SINSKEY A L/AU
E6 4 SINSKEY AJ/AU
E7 10 SINSKEY ANTHONY/AU
E8 243 SINSKEY ANTHONY J/AU
E9 2 SINSKEY ANTHONY JOHN/AU
E10 2 SINSKEY ANTHONY S/AU
E11 1 SINSKEY ANTONY J/AU
E12 1 SINSKEY G N STEPHANOPOULOS AND A J/AU

=> s e3-e8

L16 1165 ("SINSKEY A J"/AU OR "SINSKEY A J */AU OR "SINSKEY A L"/AU OR "SINSKEY AJ"/AU OR "SINSKEY ANTHONY"/AU OR "SINSKEY ANTHONY J"/AU)

=> e lessard p a/au

E1 239 LESSARD P/AU
E2 1 LESSARD P */AU
E3 85 --> LESSARD P A/AU
E4 1 LESSARD P B/AU
E5 4 LESSARD P C/AU
E6 11 LESSARD P D/AU
E7 4 LESSARD P N/AU
E8 1 LESSARD P R/AU
E9 4 LESSARD PA/AU
E10 27 LESSARD PAUL/AU
E11 2 LESSARD PAUL C/AU
E12 1 LESSARD PAUL CHRISTIAN/AU

=> s e3

L17 85 "LESSARD P A"/AU

=> e willis l b/au

E1 39 WILLIS L A/AU
E2 2 WILLIS L A M/AU
E3 35 --> WILLIS L B/AU
E4 9 WILLIS L C/AU
E5 18 WILLIS L D/AU
E6 1 WILLIS L D JR/AU
E7 8 WILLIS L E/AU
E8 1 WILLIS L F/AU
E9 95 WILLIS L G/AU
E10 1 WILLIS L H/AU
E11 1 WILLIS L I/AU
E12 21 WILLIS L J/AU

=> s e3

L18 35 "WILLIS L B"/AU

=> s l16 or l17 or l18

L19 1219 L16 OR L17 OR L18

=> d his

(FILE 'HOME' ENTERED AT 09:42:56 ON 29 MAR 2004)

FILE 'MEDLINE, EMBASE, BIOSIS, BIOTECHDS, SCISEARCH, HCAPLUS, NTIS,
LIFESCI' ENTERED AT 09:43:31 ON 29 MAR 2004

L1 8583 S PYRUVATE (A) CARBOXYLASE?
L2 7190 S GLUTAMICUM

L3 415 S L1 AND L2
L4 6447994 S CLON? OR EXPRESS? OR RECOMBINANT
L5 321 S L3 AND L4
L6 7054 S CORYNEBACTERIUM (A) L2
L7 414 S L1 AND L6
L8 321 S L4 AND L7
L9 254853 S LYSINE
L10 1966 S L9 (A) (PRODUCT? OR MAK? OR MANUFACTUR?)
L11 108 S L8 AND L10
L12 92 DUP REM L11 (16 DUPLICATES REMOVED)
L13 79 S L8 AND MUTANT?
L14 15 S L10 AND L13
L15 7 DUP REM L14 (8 DUPLICATES REMOVED)
 E SINSKEY A J/AU
L16 1165 S E3-E8
 E LESSARD P A/AU
L17 85 S E3
 E WILLIS L B/AU
L18 35 S E3
L19 1219 S L16 OR L17 OR L18

=> s l7 and l19
L20 26 L7 AND L19

=> dup rem l20
PROCESSING COMPLETED FOR L20
L21 8 DUP REM L20 (18 DUPLICATES REMOVED)

=> d 1-8 ibib ab

L21 ANSWER 1 OF 8 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
ACCESSION NUMBER: 2003-22751 BIOTECHDS

TITLE: New **pyruvate carboxylase** from
 Corynebacterium glutamicum, useful as an
 anaplerotic enzyme replenishing oxaloacetate consumed for
 biosynthesis during growth, or for lysine or glutamic acid
 production in industrial fermentations;
 recombinant enzyme production via plasmid expression in
 host cell for use in amino acid production

AUTHOR: SINSKEY A J; LESSARD P A; WILLIS L
 B

PATENT ASSIGNEE: ARCHER-DANIELS MIDLAND CO

PATENT INFO: US 2003027305 6 Feb 2003

APPLICATION INFO: US 2002-45072 15 Jan 2002

PRIORITY INFO: US 2002-45072 15 Jan 2002; US 1998-220081 23 Dec 1998

DOCUMENT TYPE: Patent

LANGUAGE: English

OTHER SOURCE: WPI: 2003-479542 [58]

AB DERWENT ABSTRACT:

NOVELTY - A new isolated **pyruvate carboxylase** polypeptide has an amino acid sequence at least 95% identical to a sequence comprising 1140 amino acids (P1) from **Corynebacterium glutamicum**, or the complete amino acid sequence encoded by the cosmid clone deposited with the American Type Culture Collection.

DETAILED DESCRIPTION - A new isolated **pyruvate carboxylase** polypeptide has an amino acid sequence at least 95% identical to a sequence comprising: (a) the sequence of the **pyruvate carboxylase** polypeptide having the complete amino acid sequence from **Corynebacterium glutamicum** with 1140 amino acids (P1) fully defined in the specification; or (b) the sequence of the **pyruvate carboxylase** polypeptide having the complete amino acid sequence encoded by the cosmid clone deposited with the American Type Culture Collection. INDEPENDENT CLAIMS are also included for the following: (1) an isolated nucleic acid

molecule comprising a polynucleotide with a nucleotide sequence at least 95% identical to a nucleotide sequence encoding the **pyruvate carboxylase** polypeptide described above, or its complement; (2) an isolated nucleic acid molecule comprising a polynucleotide that hybridizes under stringent hybridization conditions to the polynucleotide of (1), where the polynucleotide does not hybridize under stringent hybridization conditions to a polynucleotide having a nucleotide sequence consisting of only A residues or of only T residues; (3) making a recombinant vector comprising inserting the isolated nucleic acid molecule of (1) into a vector; (4) a recombinant vector produced by the method of (3); (5) making a recombinant host cell comprising introducing the recombinant vector into a host cell; (6) a recombinant host cell produced by the method of (5); and (7) a recombinant method for producing the **pyruvate carboxylase** polypeptide, or a method of making amino acids expressed by (1).

BIOTECHNOLOGY - Preferred Nucleic Acid: The polynucleotide cited in (1) has the complete nucleotide sequence comprising 3621 bp (dna1) fully defined in the specification. The polynucleotide has the nucleotide sequence of dna1, and encodes the **pyruvate carboxylase** polypeptide with the sequence P1. The polynucleotide is a DNA or RNA.

Preparation (Claimed): The recombinant method for producing the **pyruvate carboxylase** polypeptide comprises culturing the recombinant host cell cited above, under conditions where the polypeptide is expressed, and recovering the polypeptide. The **pyruvate carboxylase** is expressed 2-20-fold higher than its expression in *C. glutamicum*. The method also involves making amino acids by expressing the nucleotide sequence of (1), and recovering the amino acids. In particular, the amino acid is lysine.

USE - The polypeptide is useful as an anaplerotic enzyme replenishing oxaloacetate consumed for biosynthesis during growth. The polypeptide is also useful for lysine or glutamic acid production in industrial fermentations.

EXAMPLE - The cosmid library used was constructed by cloning *Corynebacterium glutamicum* chromosomal DNA into the Supercos vector. A cosmid containing the *C. glutamicum* **pyruvate carboxylase** gene was isolated, and subjected to sequence analysis. A 3621-bp of cosmid III F10 was sequenced. A 3420-bp open reading frame was identified, which encoded a protein of 1140 amino acids. The protein was 63% identical to *M. tuberculosis* **pyruvate carboxylase**, and 44% identical to human **pyruvate carboxylase**. This protein had a molecular mass of 123.6 kDa. (29 pages)

L21 ANSWER 2 OF 8 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
DUPLICATE 2
ACCESSION NUMBER: 2002:389315 BIOSIS
DOCUMENT NUMBER: PREV200200389315
TITLE: Pyruvate carboxylase polypeptide from
Corynebacterium glutamicum.
AUTHOR(S): Sinskey, Anthony J. [Inventor, Reprint author];
Lessard, Philip A. [Inventor]; Willis, Laura B. [Inventor]
CORPORATE SOURCE: Boston, MA, USA
ASSIGNEE: Archer Daniels Midland Company
PATENT INFORMATION: US 6403351 June 11, 2002
SOURCE: Official Gazette of the United States Patent and Trademark
Office Patents, (June 11, 2002) Vol. 1259, No. 2.
<http://www.uspto.gov/web/menu/patdata.html>. e-file.
CODEN: OGUPE7. ISSN: 0098-1133.
DOCUMENT TYPE: Patent
LANGUAGE: English
ENTRY DATE: Entered STN: 17 Jul 2002
Last Updated on STN: 17 Jul 2002
AB The present invention concerns an anaplerotic enzyme from
Corynebacterium glutamicum which replenishes

oxaloacetate consumed during lysine and glutamic acid production in industrial fermentations. In particular, isolated nucleic acid molecules are provided encoding the **pyruvate carboxylase** protein. **Pyruvate carboxylase** polypeptides are also provided.

L21 ANSWER 3 OF 8 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
DUPLICATE 3
ACCESSION NUMBER: 2001:336570 BIOSIS
DOCUMENT NUMBER: PREV200100336570
TITLE: **Pyruvate carboxylase from corynebacterium glutamicum.**
AUTHOR(S): Sinskey, Anthony J. [Inventor, Reprint author];
Lessard, Philip A. [Inventor]; Willis, Laura B. [Inventor]
CORPORATE SOURCE: Boston, MA, USA
ASSIGNEE: Massachusetts Institute of Technology
PATENT INFORMATION: US 6171833 January 09, 2001
SOURCE: Official Gazette of the United States Patent and Trademark Office Patents, (Jan. 9, 2001) Vol. 1242, No. 2. e-file.
CODEN: OGUPE7. ISSN: 0098-1133.
DOCUMENT TYPE: Patent
LANGUAGE: English
ENTRY DATE: Entered STN: 18 Jul 2001
Last Updated on STN: 19 Feb 2002
AB The present invention concerns an anaplerotic enzyme from **Corynebacterium glutamicum** which replenishes oxaloacetate consumed during lysine and glutamic acid production in industrial fermentations. In particular, isolated nucleic acid molecules are provided encoding the **pyruvate carboxylase** protein. **Pyruvate carboxylase** polypeptides are also provided.

L21 ANSWER 4 OF 8 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
ACCESSION NUMBER: 2000-12396 BIOTECHDS
TITLE: Novel polynucleotides encoding **Corynebacterium glutamicum pyruvate-carboxylase** useful for industrial fermentation processes comprises a specific nucleotide sequence; plasmid pRR850 vector-mediated gene transfer for lysine and glutamic acid scale-up
AUTHOR: Sinskey A J; Lessard P A; Willis L B
PATENT ASSIGNEE: Sinskey A J; Lessard P A; Willis L B
LOCATION: Boston, MA, USA; Framingham, MA, USA; Cambridge, MA, USA.
PATENT INFO: WO 2000039305 6 Jul 2000
APPLICATION INFO: WO 1998-US27301 23 Dec 1998
PRIORITY INFO: WO 1998-US27301 23 Dec 1998
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: WPI: 2000-465746 [40]
AB An isolated DNA (I, 3,621 bp) with a DNA sequence with at least 95% identity to a DNA sequence encoding **pyruvate-carboxylase** (II, EC-4.1.1.31), is claimed. (I) encodes a 1,140 amino acid protein sequence (specified) or is a DNA sequence encoding (II) contained within cosmid clone ATCC 10801 or their complements. Also claimed are: an isolated DNA probe (Ia) which hybridizes to (I) under stringent conditions and which does not hybridize to a DNA sequence having only A and T residues; making a recombinant vector (III, e.g. plasmid pRR850) and host cell (IV); (III) and (IV) obtained by the above method; production of (II); and an isolated (II) having an amino acid sequence at least 95% identical to that encoded by (I). (II) is useful for producing amino acids, preferably lysine and glutamic acid in industrial fermentations and for replenishing oxaloacetate consumed for biosynthesis during growth. (II) is expressed 2- to 20-fold higher than

in *Corynebacterium glutamicum*. (Ia) is used to confirm the expression of (II). (51pp)

L21 ANSWER 5 OF 8 MEDLINE on STN DUPLICATE 5
ACCESSION NUMBER: 1999019028 MEDLINE
DOCUMENT NUMBER: PubMed ID: 9802220
TITLE: Sequence of the *Corynebacterium glutamicum* pyruvate carboxylase gene.
AUTHOR: Koffas M A; Ramamoorthi R; Pine W A; Sinskey A J;
Stephanopoulos G
CORPORATE SOURCE: Department of Chemical Engineering, Massachusetts Institute of Technology, Cambridge 02139, USA.
SOURCE: Applied microbiology and biotechnology, (1998 Sep) 50 (3) 346-52.
Journal code: 8406612. ISSN: 0175-7598.
PUB. COUNTRY: GERMANY: Germany, Federal Republic of
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: GENBANK-AF038548
ENTRY MONTH: 199812
ENTRY DATE: Entered STN: 19990115
Last Updated on STN: 19990115
Entered Medline: 19981214

AB Pyruvate carboxylase is an important anaplerotic enzyme replenishing oxaloacetate consumed for biosynthesis during growth, or lysine and glutamic acid production in industrial fermentations. We used regions of homology from pyruvate carboxylase sequences of 12 different species (corresponding to the ATP- and pyruvate-binding sites), to design polymerase chain reaction (PCR) primers for amplifying a fragment of the pyruvate carboxylase (pc) gene from *C. glutamicum* genomic DNA. This 850-base-pair fragment was used to probe a *C. glutamicum* cosmid library and four candidate pc cosmids were identified. The fragment was sequenced and the sequence of the complete gene was obtained by several rounds of primer synthesis, PCR on one of the positive cosmids, and sequencing. The *C. glutamicum* pc sequence shows 64% homology with the pc gene of *Mycobacterium tuberculosis* and 44% homology with the human pc gene. Regions of ATP, pyruvate and biotin binding have also been identified.

L21 ANSWER 6 OF 8 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 97:356946 SCISEARCH
THE GENUINE ARTICLE: WX363
TITLE: Elucidation of anaplerotic pathways in *Corynebacterium glutamicum* via C-13-NMR spectroscopy and GC-MS
AUTHOR: Park S M; ShawReid C; Sinskey A J;
Stephanopoulos G (Reprint)
CORPORATE SOURCE: MIT, DEPT CHEM ENGN, CAMBRIDGE, MA 02139 (Reprint); MIT, DEPT CHEM ENGN, CAMBRIDGE, MA 02139; MIT, DEPT BIOL, CAMBRIDGE, MA 02139
COUNTRY OF AUTHOR: USA
SOURCE: APPLIED MICROBIOLOGY AND BIOTECHNOLOGY, (APR 1997) Vol. 47, No. 4, pp. 430-440.
Publisher: SPRINGER VERLAG, 175 FIFTH AVE, NEW YORK, NY 10010.
ISSN: 0175-7598.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE; AGRI
LANGUAGE: English
REFERENCE COUNT: 24
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB We have obtained direct evidence indicating the presence of

pyruvate-carboxylating activity in *Corynebacterium glutamicum*, a lysine-overproducing bacterium. This evidence was obtained through the use of C-13 nuclear magnetic resonance (NMR) spectroscopy and gas chromatography/mass spectrometry (GC-MS) of secreted metabolites in a lysine fermentation. The distribution of C-13 label after multiple turns in the tricarboxylic acid cycle was accounted for properly to obtain predictions for [C-13] metabolite enrichments that were employed in the interpretation of C-13-NMR and GC-MS data. Of critical importance in arriving at the conclusions was the use of *C. glutamicum* mutants with deletions of the pyruvate kinase and/or phosphoenolpyruvate carboxylase enzymes. Our results demonstrate the presence of pyruvate-carboxylating pathway(s) in *C. glutamicum* operating simultaneously with phosphoenolpyruvate carboxylase, with the latter enzyme contributing approximately 10% of the total oxaloacetate synthesis during the lysine-production phase with pyruvate and gluconate as carbon sources. These findings are important for developing strategies to increase the total carbon flux for synthesis of amino acids of the aspartate family through metabolic engineering.

L21 ANSWER 7 OF 8 EMBASE COPYRIGHT 2004 ELSEVIER INC. ALL RIGHTS RESERVED.
on STN DUPLICATE 6

ACCESSION NUMBER: 94068004 EMBASE

DOCUMENT NUMBER: 1994068004

TITLE: Effects of phosphoenol **pyruvate carboxylase** deficiency on metabolism and lysine production in *Corynebacterium glutamicum*

AUTHOR: Gubler M.; Sung Min Park; Jetten M.; Stephanopoulos G.; **Sinskey A.J.**

CORPORATE SOURCE: F. Hoffmann-La Roche AG, CH-4002 Basel, Switzerland

SOURCE: Applied Microbiology and Biotechnology, (1994) 40/6 (857-863).

ISSN: 0175-7598 CODEN: AMBIDG

COUNTRY: Germany

DOCUMENT TYPE: Journal; Article

FILE SEGMENT: 004 Microbiology

LANGUAGE: English

SUMMARY LANGUAGE: English

AB The phosphoenol **pyruvate carboxylase** gene (ppc) of lysine-producing *Corynebacterium glutamicum* and *C. lactofermentum* strains was inactivated by marker exchange mutagenesis. The mutants lacked completely phosphoenol **pyruvate carboxylase** (PEP carboxylase) activity, but grew in minimal medium containing glucose as the sole carbon source. In addition, the ppc-strains produced equivalent titers of lysine in shake flasks and in 10-l fermentation experiments as their parent strains. To address the question of how ppc- *Corynebacterium* strains generate oxaloacetate (OAA) for their own metabolism as well as for high-level lysine production, we measured the activities of enzymes leading to OAA synthesis. Whereas **pyruvate carboxylase** activity was not detected in any of the strains, phosphoenol pyruvate carboxykinase (PEP carboxykinase) activity was found to be significantly higher in *C. glutamicum* ppc mutants compared to the parent strains. On the other hand, PEP carboxykinase activity in *C. lactofermentum* was essentially absent. As glyoxylate cycle enzymes are strongly repressed by glucose, they are not likely to compensate for the lack of PEP carboxylase activity, PEP carboxykinase, among several candidates, could play this role.

L21 ANSWER 8 OF 8 EMBASE COPYRIGHT 2004 ELSEVIER INC. ALL RIGHTS RESERVED.
on STN DUPLICATE 7

ACCESSION NUMBER: 94103653 EMBASE

DOCUMENT NUMBER: 1994103653

TITLE: Regulation of phospho(enol)-pyruvate- and oxaloacetate-converting enzymes in *Corynebacterium*

AUTHOR: **glutamicum.**
Jetten M.S.M.; Pitoc G.A.; Follettie M.T.; **Sinskey**
A.J.

CORPORATE SOURCE: Department of Biology, Massachusetts Technology Institute,
77 Massachusetts Avenue, Cambridge, MA 02139, United States

SOURCE: Applied Microbiology and Biotechnology, (1994) 41/1
(47-52).

COUNTRY: Germany

DOCUMENT TYPE: Journal; Article

FILE SEGMENT: 004 Microbiology

LANGUAGE: English

SUMMARY LANGUAGE: English

AB The presence and properties of the enzymes involved in the synthesis and conversion of phospho(enol)pyruvate (PEP) and oxaloacetate (OAA), the precursors for aspartate-derived amino acids, were investigated in three different *Corynebacterium* strains. This study revealed the presence of both PEP carboxykinase $0.29 \text{ } \mu\text{mol} \cdot \text{min}^{-1} \cdot \text{mg}^{-1}$ of protein [units ($\text{U} \cdot \text{mg}^{-1}$)] and PEP synthetase ($0.13 \text{ U} \cdot \text{mg}^{-1}$) in *C. glutamicum* as well as pyruvate kinase ($1.4 \text{ U} \cdot \text{mg}^{-1}$) and PEP carboxylase ($0.16 \text{ U} \cdot \text{mg}^{-1}$). With the exception of PEP carboxykinase these activities were also present in glucose-grown *C. flavum* and *C. lactofermentum*. **Pyruvate carboxylase** activity was not detected in all three species cultivated on glucose or lactate. At least five enzyme activities that utilize OAA as a substrate were detected in crude extracts of *C. glutamicum* citrate synthase ($2 \text{ U} \cdot \text{mg}^{-1}$), malate dehydrogenase ($2.5 \text{ U} \cdot \text{mg}^{-1}$), glutamate: OAA transaminase ($1 \text{ U} \cdot \text{mg}^{-1}$), OAA-decarboxylating activity ($0.89 \text{ U} \cdot \text{mg}^{-1}$) and the previously mentioned PEP carboxykinase ($0.29 \text{ U} \cdot \text{mg}^{-1}$). The partially purified OAA-decarboxylase activity of *C. glutamicum* was completely dependent on the presence of inosine diphosphate and Mn²⁺, had a Michaelis constant (K_m) of 2.0 mM for OAA and was inhibited by ADP and coenzyme A (CoA). Examination of the kinetic properties showed that adenine nucleotides and CoA derivatives have reciprocal but reinforcing effects on the enzymes catalyzing the interconversion of pyruvate, PEP and OAA in *C. glutamicum*. A model for the regulation of the carbon flow based on these findings is presented.

=> d his

(FILE 'HOME' ENTERED AT 09:42:56 ON 29 MAR 2004)

FILE 'MEDLINE, EMBASE, BIOSIS, BIOTECHDS, SCISEARCH, HCAPLUS, NTIS, LIFESCI' ENTERED AT 09:43:31 ON 29 MAR 2004

L1 8583 S PYRUVATE (A) CARBOXYLASE?
L2 7190 S GLUTAMICUM
L3 415 S L1 AND L2
L4 6447994 S CLON? OR EXPRESS? OR RECOMBINANT
L5 321 S L3 AND L4
L6 7054 S CORYNEBACTERIUM(A) L2
L7 414 S L1 AND L6
L8 321 S L4 AND L7
L9 254853 S LYSINE
L10 1966 S L9 (A) (PRODUCT? OR MAK? OR MANUFACTUR?)
L11 108 S L8 AND L10
L12 92 DUP REM L11 (16 DUPLICATES REMOVED)
L13 79 S L8 AND MUTANT?
L14 15 S L10 AND L13
L15 7 DUP REM L14 (8 DUPLICATES REMOVED)
E SINSKEY A J/AU
L16 1165 S E3-E8
E LESSARD P A/AU
L17 85 S E3

E WILLIS L B/AU
L18 35 S E3
L19 1219 S L16 OR L17 OR L18
L20 26 S L7 AND L19
L21 8 DUP REM L20 (18 DUPLICATES REMOVED)

| | Issue Date | Pages | Document ID | Title |
|----|-------------------|--------------|-------------------------|--|
| 1 | 20030717 | 8 | US
20030134397
A1 | Method for producing L-glutamic acid by fermentation |
| 2 | 20030508 | 53 | US
20030087381
A1 | Metabolically engineered organisms for enhanced production of oxaloacetate-derived biochemicals |
| 3 | 20030313 | 214 | US
20030049804
A1 | Corynebacterium glutamicum genes encoding metabolic pathway proteins |
| 4 | 20030206 | 29 | US
20030027305
A1 | Pyruvate carboxylase from Corynebacterium glutamicum |
| 5 | 20021226 | 158 | US
20020197605
A1 | Novel Polynucleotides |
| 6 | 20021128 | 21 | US
20020177202
A1 | Feedback-resistant pyruvate carboxylase gene from corynebacterium |
| 7 | 20021017 | 21 | US
20020151010
A1 | Regulation of carbon assimilation |
| 8 | 20020509 | 24 | US
20020055153
A1 | L-lysine-producing corynebacteria and process for the preparation of lysine |
| 9 | 20040224 | 258 | US 6696561
B1 | Corynebacterium glutamicum genes encoding proteins involved in membrane synthesis and membrane transport |
| 10 | 20030729 | 19 | US 6599732
B1 | Regulation of carbon assimilation |
| 11 | 20020924 | 32 | US 6455284
B1 | Metabolically engineered E. coli for enhanced production of oxaloacetate-derived biochemicals |

| | Issue Date | Pages | Document ID | Title |
|----|-------------------|--------------|--------------------|---|
| 12 | 20020611 | 29 | US 6403351
B1 | Pyruvate carboxylase polypeptide from <i>Corynebacterium glutamicum</i> |
| 13 | 20010109 | 29 | US 6171833
B1 | Pyruvate carboxylase from <i>corynebacterium glutamicum</i> |
| 14 | 19921229 | 12 | US 5175108
A | Plasmids from <i>corynebacterium glutamicum</i> and plasmid vectors derived therefrom |

| | Issue Date | Pages | Document ID | Title |
|----|-------------------|--------------|--------------------|---|
| 1 | 20030508 | 53 | US 20030087381 A1 | Metabolically engineered organisms for enhanced production of oxaloacetate-derived biochemicals |
| 2 | 20030206 | 29 | US 20030027305 A1 | Pyruvate carboxylase from <i>Corynebacterium glutamicum</i> |
| 3 | 20021128 | 21 | US 20020177202 A1 | Feedback-resistant pyruvate carboxylase gene from <i>corynebacterium</i> |
| 4 | 20021017 | 21 | US 20020151010 A1 | Regulation of carbon assimilation |
| 5 | 20040224 | 258 | US 6696561 B1 | <i>Corynebacterium glutamicum</i> genes encoding proteins involved in membrane synthesis and membrane transport |
| 6 | 20030729 | 19 | US 6599732 B1 | Regulation of carbon assimilation |
| 7 | 20020924 | 32 | US 6455284 B1 | Metabolically engineered <i>E. coli</i> for enhanced production of oxaloacetate-derived biochemicals |
| 8 | 20020611 | 29 | US 6403351 B1 | Pyruvate carboxylase polypeptide from <i>Corynebacterium glutamicum</i> |
| 9 | 20010109 | 29 | US 6171833 B1 | Pyruvate carboxylase from <i>corynebacterium glutamicum</i> |
| 10 | 19921229 | 12 | US 5175108 A | Plasmids from <i>corynebacterium glutamicum</i> and plasmid vectors derived therefrom |

| | Issue Date | Pages | Document ID | Title |
|---|-------------------|--------------|-------------------------|--|
| 1 | 20030501 | 27 | US
20030082756
A1 | 1,3-propanediol and polymer derivatives from a fermentable carbon source |
| 2 | 20030417 | 39 | US
20030072746
A1 | Method of alleviating chronic pain via peripheral glutaminase regulation |
| 3 | 20030320 | 453 | US
20030055231
A1 | 12 human secreted proteins |
| 4 | 20030206 | 29 | US
20030027305
A1 | Pyruvate carboxylase from <i>Corynebacterium glutamicum</i> |
| 5 | 20020806 | 27 | US 6428767
B1 | Method for identifying the source of carbon in 1,3-propanediol |
| 6 | 20020611 | 29 | US 6403351
B1 | Pyruvate carboxylase polypeptide from <i>Corynebacterium glutamicum</i> |
| 7 | 20010109 | 29 | US 6171833
B1 | Pyruvate carboxylase from <i>corynebacterium glutamicum</i> |

| | L # | Hits | Search Text |
|----|-----|-------|---|
| 1 | L1 | 725 | Pyruvate adj
carboxylase\$2 |
| 2 | L3 | 0 | "C. glutamicum" |
| 3 | L2 | 1 | croynebacterium adj
glutamicum |
| 4 | L4 | 745 | corynebacterium adj
glutamicum |
| 5 | L5 | 14 | 11 same 14 |
| 6 | L6 | 59691 | lysine or "amino adj
acid\$2" |
| 7 | L7 | 196 | 14 same 16 |
| 8 | L8 | 10 | 11 same 17 |
| 9 | L9 | 23696 | SINSKEY-ANTHONY-J
LESSARD-PHILIP-A
WILLIS |
| 10 | L10 | 7 | 11 and 19 |